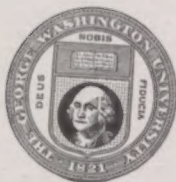


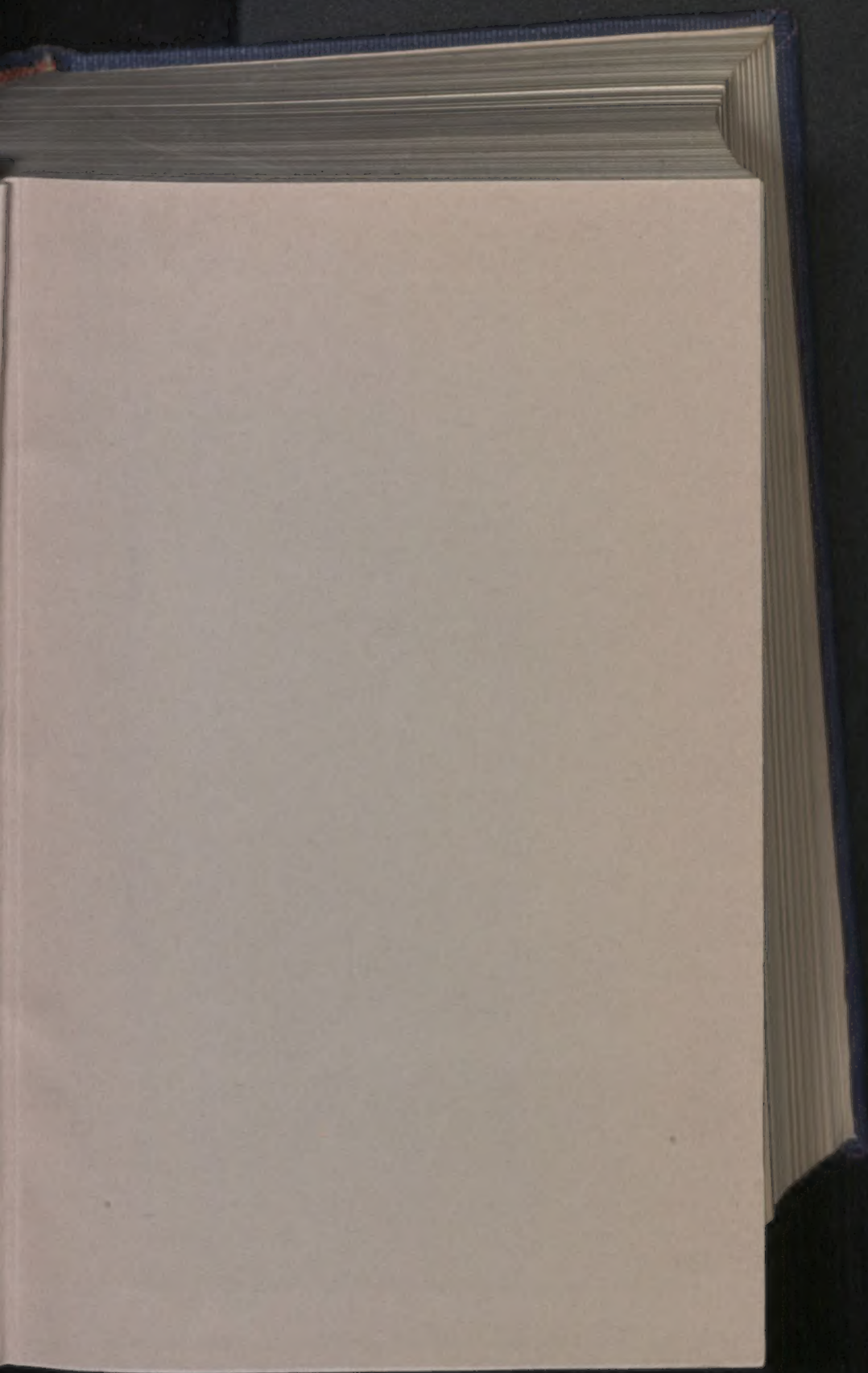
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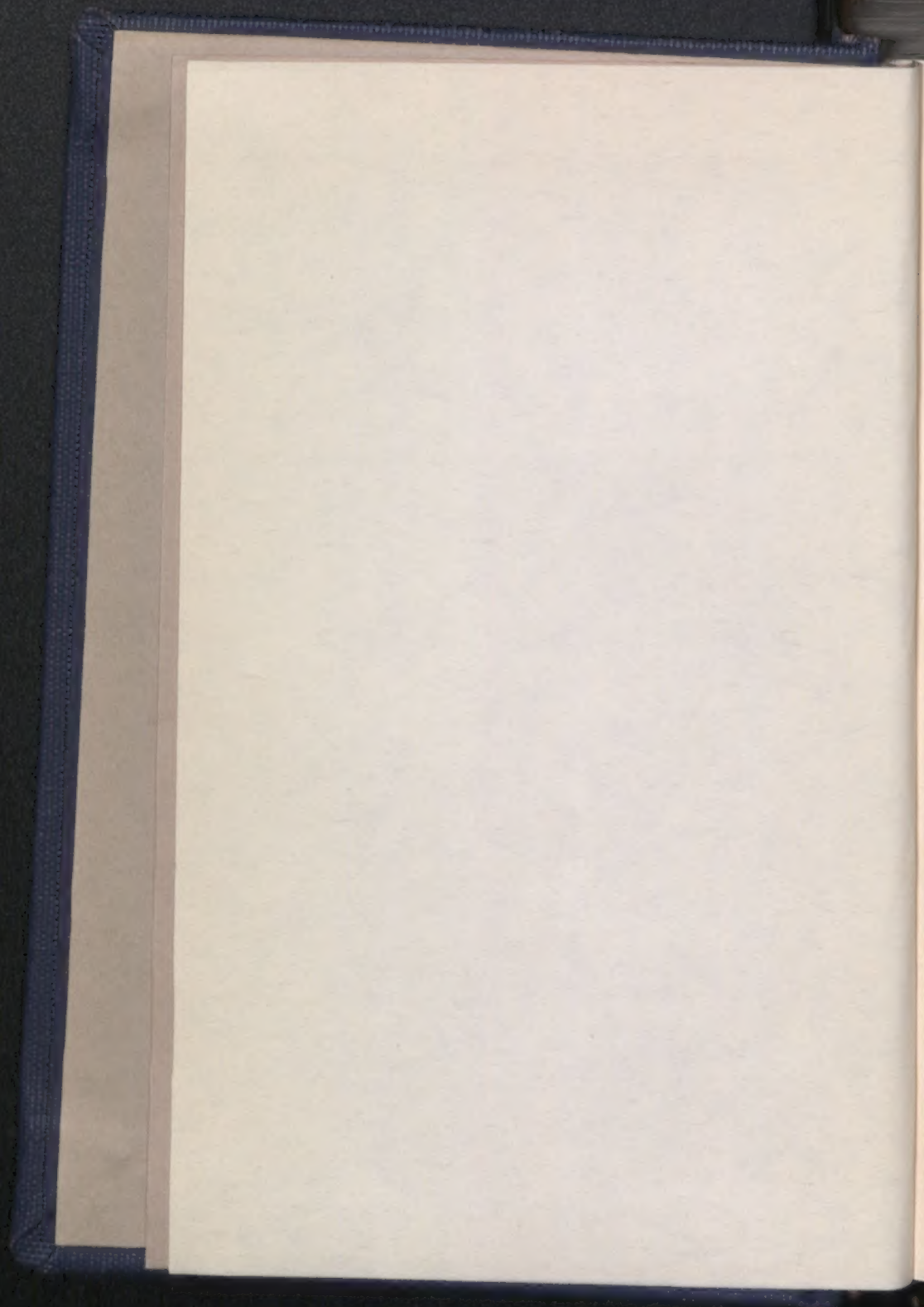
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THE
GEORGE
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THE SUMMER SESSIONS

VOL. 140 1954

No. 1

THE SUMMER SESSIONS

WASHINGTON, D. C.

ORIGINATED IN JANUARY
1954

BY THE UNIVERSITY

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THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

VOL. LIII

No. I

THE SUMMER SESSIONS

WASHINGTON, D. C.

PUBLISHED IN JANUARY
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BY THE UNIVERSITY

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WASHINGTON
UNIVERSITY

BULLETIN

No. 1

Vol. III

THE SUMMER SESSIONS

WASHINGTON, D. C.

PUBLISHED IN JANUARY

MCMXLV

BY THE UNIVERSITY

CALENDAR OF THE 1954 SUMMER SESSIONS

Date	Day	Occasion
June 21	Monday	Registration for the eight-week term*
June 22	Tuesday	Classes begin
July 5	Monday	Independence Day. Holiday
Aug. 14	Saturday	Foreign-language examinations for candidates for the Master's degrees
Aug. 16	Monday	Eight-week term ends Last day for receiving theses for the Master's degrees and for the professional degrees in Engineering to be conferred in November
Sept. 10	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy and Doctor of Education to be conferred in November

THE LAW SCHOOL

June 11	Friday	Registration and first day of classes for the first session
June 14	Monday	Classes begin
July 5	Monday	Independence Day. Holiday
July 10	Saturday	Make-up class
July 21	Wednesday	Last day of classes for the first session
July 23 and 24	Friday and Saturday ..	First-session examination period
July 26	Monday	Registration
July 28	Wednesday	Classes begin
Sept. 3	Friday	Last day of classes for the second session
Sept. 6	Monday	Labor Day. Holiday
Sept. 7-9	Tuesday through Thursday	Second-session examination period

THE SCHOOL OF EDUCATION—SPECIAL SESSIONS

June 14	Monday	Registration and first day of classes of the pre-session
July 2	Friday	Pre-session ends
July 5	Monday	Independence Day. Holiday
July 6	Tuesday	Registration and first day of classes of the special six-week session
Aug. 13	Friday	Special six-week session ends
Aug. 16	Monday	Registration and first day of classes of the post-session
Sept. 3	Friday	Post-session ends

Registration for the academic year 1954-55 will be held September 23, and 24.

* For all schools and colleges offering courses in the Summer Term except the Law School and the School of Education.

THE UNIVERSITY

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The Board of Trustees of the University is composed of the President of the University *ex officio* and the following persons by election:

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sity Students

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

Columbian College in the District of Columbia was chartered by an act of Congress of February 9, 1821. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences; two years of pre-professional work; and two-year terminal courses. Each of these curricula leads to the degree of Associate in Arts.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers curricula leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law (for foreign students wishing (1) to return to their own countries or (2) to remain in this country for the practice of law), and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, and Master of Science in Engineering. It also directs work leading to the professional degrees in the fields of civil, electrical, and mechanical engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the degrees of Master of Arts in Government in the fields of Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration in the fields of General Administration and Governmental Fiscal Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies includes the following divisions: the Off-Campus Division, the Campus Division, and the Division of Community Services. The college is designed for adults, and sponsors a program of credit and non-credit courses throughout the year.

The Division of University Students makes available courses for mature students not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is on the final list of the Association of American Universities. This fact not only assures to students the academic standards of this association, but also is important to those who desire to transfer credits from one institution to another.

The University is also accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools, and is on the approved list of the American Association of University Women.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Col-

leges, and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education and is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor; as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

EDUCATIONAL FACILITIES

Buildings, grounds, and equipment of the University are valued at over \$18,000,000. The buildings of the colleges, schools, and divisions offering Summer Sessions work are in the vicinity of Twenty-first and G Streets, NW.

The University Library.—The University Library contains 260,000 volumes, and with the exception of the law and medical collections is housed in the Library Building.

Regulations governing the use of the library, the circulation of books, and the use of reserve books and periodicals are available at the service desks of the Library.

OTHER LIBRARY FACILITIES IN WASHINGTON

The student has access also to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the Army Medical Library, the Library of the Smithsonian Institution, and many other great special collections of the government departments.

RESEARCH FACILITIES OF WASHINGTON

The arrangement of the summer schedule of classes permits the full-time student to avail himself of the opportunity to study, at first hand, the working of the Federal Government and so to form a background for intelligent and useful citizenship.

In the departmental libraries of the Federal Government are a multitude of reports made by eminent specialists in all fields of science on the results of study and research in the bureaus, experimental stations, laboratories, museums, and observatories of the Nation.

In addition to the governmental collection the student has access to the research facilities of such scientific and educational groups, whose headquarters are situated in Washington, as the Carnegie Institution, the American Council on Education, the American Council of Learned Societies, the National Academy of Sciences, the National Research Council, the National Education Association, and the National Geographic Society.

THE SUMMER SESSIONS

1954

STAFF OF INSTRUCTION IN THE SUMMER SESSIONS

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 Grover LaMarr Angel, A.M., Ed.D., *Lecturer in Education*
 Gordon Barnewall, M.B.A., *Associate Professor of Business Administration*
 Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor of Law*
 Wilbur Earle Benson, M.B.A., *Instructor in Accounting*
 Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*
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 Paul William Bowman, Ph.D., *Professor of Biology*
 James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*
 John Patrick Burke, A.B., LL.B., *Associate Professor of Law*
 Arthur Edward Burns, Ph.D., *Professor of Economics*
 Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
 Robert Dale Campbell, Ph.D., *Professor of Geography*
 John Edward Cantlon, Ph.D., *Associate Professor of Botany*
 William Graham Clubb, A.M., *Assistant Professor of French*
 James Harold Coberly, Ph.D., *Associate Professor of American Literature*
 Mary Ellen Coleman, A.M., *Assistant Professor of Education*
 Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
 James Coogan, Ph.D., *Assistant Professor of Economics*
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 Robert McKinney Cooper, Ph.M., J.D., *Associate Professor of Law*
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 Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
 John Theodore Fey, LL.B., M.B.A., J.S.D., *Associate Professor of Law*
 Eric Fischer, Ph.D., *Professorial Lecturer in Geography*
 Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*

- James Harold Fox, A.M., Ed.D., *Professor of Education*
 William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
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 Wood Gray, Ph.D., *Professor of American History*
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 Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
 Robert Hamilton Moore, Ph.D., *Associate Professor of English Composition*
 Edith Elizabeth Mortenson, Ph.D., *Associate Professor of Zoology*
 James Norman Mosél, A.M., *Associate Professor of Psychology*
 Sam Clark Munson, Ph.D., *Associate Professor of Biology*

Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
 Herman Israel Orentlicher, A.B., LL.B., *Associate Professor of Law*
 Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*

Calvin Weir Pettit, Ph.D., *Associate Professor of Speech*
 Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
 Lewis Otto Quam, Ph.D., *Professorial Lecturer in Geography*
 James Willis Robb, A.M., *Assistant Professor of Romance Languages*
 Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
 Blake Smith Root, A.M., Ed.D., *Professor of Education*
 Ralph Windsor Ruffner, A.M., Ed.D., *Professor of Education*
 William Edward Schmidt, M.S., *Assistant Professor of Chemistry*
 Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
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 Rafael Supervía, Doctor en Derecho, *Associate Professor of Spanish*
 James Henry Taylor, Ph.D., *Professor of Mathematics*
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 Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
 Robert Corbin Vincent, Ph.D., *Associate Professor of Chemistry*
 Donald Stevenson Watson, Ph.D., *Professor of Economics*
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THE SUMMER SESSIONS

The work of the Summer Sessions has been planned to meet the needs of full- and part-time students.

During the summer of 1954, courses are offered in the Junior College, Columbian College (the senior college), the Law School, the School of Education, the School of Government, and the Division of Air Science.

ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of \$3. A recent photograph, with signature, of the applicant must be attached to the blank.

ENTRANCE REQUIREMENTS

The Student Seeking a Degree

An applicant from a secondary school must send the high school record form furnished by the University to his high school principal, with the request that the principal fill out the form and mail it direct to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning should request the registrar of that institution to mail direct to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the registrar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned*, together with an honorable dismissal.

Entrance requirements are stated in this bulletin under the various colleges, schools, and divisions.

The Student Not Seeking a Degree

Students 21 years of age or over who are not interested in working for a degree in this University may be considered for admission to the Division of University Students to take courses for which they have adequate preparation, as evidenced by previous scholastic records.

In special instances, with the permission of the instructor, a person who has been admitted to the University may be registered as an auditor in a class without being required to take active part in the exercises or to pass examinations, but no academic credit will be allowed for such

attendance. Students in good standing and matriculated for degrees in other institutions who wish to take certain courses in this University will be admitted to the Division of University Students for the summer only, to the extent that the facilities permit. In such cases transcripts of record are not required.

REGISTRATION

Before a student may register he must have satisfied the Office of Admissions that he is qualified to enter the University.

A student previously matriculated in the University but not in attendance during the term preceding this registration must file an application for readmission in advance of registration.

For registration, students should report to the Office of the Registrar,* Building C, 2029 G Street NW., between 9:00 A.M. and 7:00 P.M., on the dates stated in the Calendar.

CHANGES IN PROGRAM OF STUDY

Changes in programs of study may be made only with the permission of the adviser or major professor and the dean or director of the college, school, or division concerned.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted:

TUITION FEES

For each credit hour for which the student registers except work in the Law School, work toward the Master's degree in Engineering, and work taken by a candidate for a Doctor's degree†.....	\$ 15.00
For each credit hour for which the student registers in the Law School.....	17.00
For the degree of Doctor of Philosophy, Doctor of Education, or Doctor of Business Administration:	
For work§ leading to and including the Council Fellowship or General examination||.....	450.00
For work leading to and including the final examination§.....	450.00

* Registration for the Law School is conducted in Stockton Hall, 720 Twentieth Street, NW.

† Payment of tuition for the Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

§ This fee does not cover the cost of tuition for elementary courses (numbered 1 to 100), for French 107, or German 107.

|| When a limited schedule is carried which extends the time of either the preparation period or the examination period to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

For the degree of Doctor of Juridical Science:

For work leading to and including the final examination *..... 450.00

For the degree of Master of Science in Engineering:

For work leading to and including the Comprehensive Examination 550.00

ADDITIONAL COURSE FEES

In certain courses additional fees such as laboratory and material fees are charged as indicated in the course descriptions. These fees are due with the tuition fee for the course. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee, the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES

Wherein the degree of Associate in Arts is granted..... 10.00

Wherein a degree other than the Associate in Arts degree is granted 20.00

FEE FOR BINDING MASTER'S THESIS..... 5.00

FEE FOR PRINTING AND FILING SUMMARY OF DOCTORAL DISSERTATION.... 75.00

SPECIAL FEES

Application fee, charged each applicant for admission, non-refundable 3.00

Scholastic-aptitude test fee (when required for admission)..... 3.00

Late registration fee, charged each student who fails to register within the designated period 5.00

Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration..... 5.00

Service fee, charged each student for late payment of tuition (see "Payment of Fees")..... 1.00

Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees..... 5.00

For each examination to qualify for advanced standing and for each special examination 5.00

Laboratory checkout fee, charged each student in chemistry and pharmacy courses who fails to check out of the laboratory by the time set by the instructor..... 2.00

Transcript fee, charged for each transcript of record after the first... 1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of the University library facilities, except as otherwise designated; (4) medical attention and hospital services described below. These privileges, with the exception of the issuance of transcripts, cease when the student withdraws or is dismissed from the University.

Medical and Hospital Services.—These services include: (1) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical opera-

* When a limited schedule is carried which extends the time of either the preparation period or the examination period to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

tion, laboratory, or X-ray examinations; (2) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each session are due in advance at the time of registration.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Registrations are for the session, and no refunds or rebates are allowed, unless the registration is in advance and the course is dropped before the day of registration for the session involved.

A student who preregisters and withdraws prior to the date of regular registration will be charged a withdrawal fee of \$5.

In no case will any part of the initial payment of tuition be refunded because of nonattendance upon classes.

Payments apply only to the session for which registration charges are incurred, and in no case will these payments be credited to another session or term.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a laboratory check-out fee of \$2. A student dropping a course before the end of the session must check out of the laboratory at the next scheduled laboratory period.

No permission to withdraw and no certificate for work done will be given a student who has not a clear financial record.

UNIVERSITY REGULATIONS

Students in the Summer Sessions are subject to, and are expected to familiarize themselves with, the University regulations as stated in the general catalogue.

Academic Credit.—The Summer Sessions are an integral part of the University. Academic credit for completed work will be given toward the appropriate degrees in the various colleges and schools of the University in accordance with their separate regulations and requirements.

Residence.—Summer Sessions work may be counted in residence but the candidate for a degree must satisfy the residence requirements of the school or college concerned as stated in the general catalogue.

Amount of Work.—No full-time student may take more than nine credit hours of work during the eight-week session; no employed student, more than six hours.

In the Law School the maximum amount of work that may be taken in both sessions by a full-time student is sixteen credit hours; by an employed student, ten credit hours.

The right is reserved to drop any student whenever, in the interest of the student or the University, the Faculty deems it advisable to do so.

The University is not responsible for the loss of personal property belonging to a student.

The University and its various colleges, schools, and divisions reserve the right to modify or change the requirements, rules, and fees of the University. Such regulations shall go into force whenever the proper authorities may determine and shall apply to every student of the University.

Detailed information concerning curricula; courses offered; admission; scholarship requirements of the individual colleges, schools, and divisions; and requirements for degrees may be obtained from the general catalogue, which is available on request at the Office of the Director of Admissions.

VETERANS EDUCATION

The George Washington University is approved to provide training to veterans under the provisions of Public Laws 346, 16, 550, and 894. The Office of Veterans Education, 2029 H Street NW., Building Q, operates as a service bureau for veterans interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained concerning the educational program of the University and the procedure for securing educational benefits under the GI bills. Veterans residing in the Washington area will often find it to their advantage to seek advice at the Office of Veterans Education before applying to the Veterans Administration for a Certificate.

PUBLIC LAW 346

(WORLD WAR II GI BILL)

At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to the Washington Regional Office of Veterans Administration, 1825 H Street NW., for a Certificate of Eligibility and Entitlement, for presentation to the Office of Veterans Education at the time of registration. Veterans who have attended another institution under the GI Bill must obtain a Supplemental Certificate from the Veterans Administration for presentation to this University at registration. With few exceptions, veterans are required to maintain continuity in course by taking at least one subject each fall term and each spring term. In most cases veterans who withdraw from the University during the fall or spring term will be considered to have terminated their courses and thus forfeited further educational benefits. Any veteran who has interrupted his training during a term or for an entire term must secure authorization to reenter from Veterans Administration to be presented at the time of registration.

PUBLIC LAW 550

(KOREAN GI BILL)

In order to be eligible for the benefits under this GI Bill, a veteran must have been in service since June 27, 1950, and must no longer be on active duty. For further information concerning these benefits, it is suggested that he consult the Office of Veterans Education or the Washington Regional Office of Veterans Administration, 1825 H Street NW., regarding application for a Certificate for Education and Training, which should be presented at the time of registration. A photostatic copy of separation papers must accompany this original application. Veterans who have attended another institution under any GI bills must obtain a Supplemental Certificate from the Veterans Administration for presentation to this University at registration.

PUBLIC LAWS 16 AND 894

(VOCATIONAL REHABILITATION)

Disabled veterans desiring vocational rehabilitation under either GI Bill should apply to the Washington Regional Office of the Veterans Administration, 1825 H Street NW., for approval of their training objective at least sixty days prior to registration.

STUDENT LIFE

SOCIAL AND RECREATIONAL PROGRAM OF THE UNIVERSITY

The summer social and recreational program includes regularly scheduled social, square, and folk dances on Lisner Terrace. For those who would like instruction and practice in dance, teaching sessions are provided. Get-acquainted teas and a carnival are also included in the program.

During the summer notices of the many recreational and social opportunities offered in the Capital will be posted on a bulletin board in the Student Union.

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at \$35 a month and double rooms at \$30 a month a person. Meals are served at the Student Union. Applications for rooms should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW.

Girls under the age of twenty-one who are enrolled for six or more credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for \$24 a month a person. Meals are served at the Student Union. Application forms for room reservation may be obtained from the Director of Activities for Men, Building R, 2027 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, in the Student Union Annex. The reservation of rooms in private houses must be made by students.

THE COLLEGES, SCHOOLS, AND DIVISIONS

THE COLLEGES, SCHOOLS, AND DIVISIONS

Information concerning specific requirements for degrees is omitted from this bulletin. For such information, the student is referred to the general catalogue.

THE JUNIOR COLLEGE

The Junior College includes the first two years of college work. Its curricula are intended to continue the studies of a general cultural nature begun in secondary school, and to lay a foundation for the more specialized work which is to follow.

The Junior College also provides the preprofessional work required for admission to the schools of Pharmacy, Education, and Government, and the first two years of the preprofessional work required for admission to the schools of Medicine and Law.

In addition it provides a two-year terminal curriculum in Secretarial Studies and a two-year terminal curriculum in Accounting for students who wish strictly vocational training in these subjects.

THE DEGREE OF ASSOCIATE IN ARTS

The Junior College offers work leading to the degree of Associate in Arts.

ENTRANCE REQUIREMENTS

An acceptable certificate of graduation from an accredited secondary school is required. The acceptability of the certificate depends upon the student's character and the quality of his work.

COLUMBIAN COLLEGE

Columbian College, the senior college of liberal arts and sciences, comprises the work of the junior and senior years and the Master of Arts and Master of Science disciplines.

THE DEGREES

Columbian College offers work leading to the following degrees: Bachelor of Arts, Bachelor of Science, Master of Arts, and Master of Science. In cooperation with the School of Medicine, Columbian College offers work leading to the combined degrees of Bachelor of Arts and Doctor of Medicine.

UNDERGRADUATE MAJORS

Curricula leading to the degree of Bachelor of Arts are available in the following major fields:

American Thought and Civilization	Latin American Civilization and Culture
Art:	Mathematics
Appreciation	Philosophy
Drawing and Painting	Physics
Biology	Political Science
Botany	Psychology
Chemistry	Religion
Economics	Sociology
English Literature	Spanish American Literature
French Literature	Spanish Literature
Geography	Speech
Germanic Languages and Literatures	Statistics
History	Zoology
Journalism:	
News-Editorial	
Public Relations	

Curricula leading to the degree of Bachelor of Science are available in the following major fields:

Biology	Physics
Botany	Statistics
Chemistry	Zoology
Mathematics	

GRADUATE FIELDS

Graduate work leading to the degree of Master of Arts or Master of Science is offered in the following fields:

American Literary and Cultural	Latin American Civilization and Culture
History	Mathematics
Anatomy	Pharmacology
Bacteriology	Philosophy
Biochemistry	Physics
Biology	Physiology
Botany	Political Science
Chemistry	Psychology
Economics	Sociology
English and American Literature	Spanish American Literature
English Literature	Spanish Literature
French Literature	Statistics
Geography	Zoology
History	

In addition, programs can be arranged in combined fields subject to the approval of the division or divisions concerned.

ENTRANCE REQUIREMENTS

For the Bachelor's degrees, the degree of Associate in Arts based on the appropriate curriculum in the Junior College, or the equivalent, is required. Scholarship requirements may be somewhat higher than those for graduation from the Junior College. For the Master's degrees, an approved Bachelor's degree from an accredited institution and a transcript of studies previously pursued, showing appropriate distribution of courses and a superior quality of work in the major field, are required.

THE GRADUATE COUNCIL

The Graduate Council offers work leading only to the degree of Doctor of Philosophy. Because the basis for work under the Graduate Council is primarily creative research, regular study in specific courses is considered quite incidental and is therefore not emphasized in connection with the curricula of the Summer Sessions. A student wishing to work under the disciplines of the Graduate Council will consult the Chairman of the Graduate Council for information concerning credentials and candidacy.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request by the Office of the Graduate Council.

THE LAW SCHOOL

The Law School offers work leading to the following degrees: Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

ENTRANCE REQUIREMENTS

For the Degree of Bachelor of Laws.—A Bachelor's degree awarded upon completion of a four-year course in an approved college or university is required. All pre-legal work must be of a satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

The Juris Doctor degree is conferred as a recognition of completion with high rank of the full course, including experience in research and legal authorship. A student does not register as a candidate for this degree until his last year in the Law School.

For the Degree of Master of Laws.—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of Amer-

ican Law Schools are required. Candidates for admission must have attained an average grade on all work done for the Bachelor of Laws degree equivalent to the relative position of a *B* average in the standards of grading at this Law School, except that, in the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative.

For the Degree of Master of Comparative Law.—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or lyceo (junior college); and (2) graduation in law from a recognized foreign university where training was in civil law.

For the Degree of Doctor of Juridical Science.—The following are required: (1) the degree of Juris Doctor from this Law School; or (2) the degree of Bachelor of Arts from an approved college, the degree of Bachelor of Laws or the equivalent, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students.—The following applicants may, at the discretion of the Dean, be admitted as unclassified students:

1. Those who, though eligible, do not desire to be degree candidates.
2. Those who are in good standing as degree candidates in other law schools which are members of the Association of American Law Schools.
3. Those who are not eligible for admission as candidates for degree but are members of the bar.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students.—A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to register as degree candidates or as unclassified students should file the regular application for admission form.

THE SCHOOL OF EDUCATION

The School of Education prepares teachers, supervisors, and administrators for educational service and offers opportunities to teachers of experience to extend their education. The schedule of courses is arranged to meet the needs of employed students as well as those able to devote full time to their studies. It offers both graduate and undergraduate work.

THE DEGREES

The School of Education offers work leading to the following degrees: Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education, Master of Arts in Education, and Doctor of Education.

ENTRANCE REQUIREMENTS

For the Bachelor's Degrees.—The satisfactory completion of two years of approved college work, or graduation from an approved two-year normal school, or the equivalent, is required.

For the Master's Degree.—A Bachelor's degree from an accredited college, or the equivalent, and the approval of the Committee on Admissions and Advanced Standing are required.

For the Doctor's Degree.—A Master's degree from an accredited college, or the equivalent, and the approval of the Faculty of the School of Education are required.

THE SCHOOL OF GOVERNMENT

THE DEGREES

The School of Government offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in Foreign Affairs, Statistics, Accounting, or Business Administration; (2) Master of Arts in Government with a major field in Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, or Vocational Counseling; (3) Master of Arts in Public Administration with a major in General Administration or Governmental Fiscal Administration; (4) Master of Arts in Personnel Administration; (5) Master of Business Administration; (6) Doctor of Business Administration.

ENTRANCE REQUIREMENTS

For the Bachelor's Degree

Bachelor of Arts in Government.—An Associate in Arts degree based on the *Foreign Affairs, Accounting, Business Administration, or Statistics* curriculum in the Junior College, or the equivalent, and a quality-point index of 2.00 for the first two years' work are required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted at the discretion of the Dean's Council, but will be required to take such extra work above the minimum requirements as may be prescribed.

Students admitted to candidacy must have attained a quality-point index of 3.00 (a "B" average) in their undergraduate major. Applicants whose scholastic average is below 3.00 in their major, or who lack prerequisite courses, may be referred to the Division of Special Students to make up the deficiency.

Master of Arts in Government.—The applicants' undergraduate program must have included prerequisite courses, corresponding to undergraduate majors at this University, for the chosen field of graduate study.

Master of Arts in Public Administration.—An undergraduate major in a social science field appropriate to the chosen field of advanced work in public administration is required.

Master of Arts in Personnel Administration.—An undergraduate major in a social science or education, with the appropriate courses in psychology is required.

Master of Business Administration.—An acceptable undergraduate major in Business Administration or the equivalent is required. Applicants who are deficient in such course work may be admitted and will be required to make up deficiencies over and above the normal Master of Business Administration program.

For the Degree of Doctor of Business Administration

A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in Statistics and Accounting to the satisfaction of the Committee on Doctoral Studies are required.

FOREIGN SERVICE REVIEW COURSE

The University will offer a ten-week non-credit Review Course in preparation for the written Foreign Service Examination to be given by the Department of State in September 1954. For information and application forms, write to the Director, Foreign Service Review Course, School of Government.

COLLEGE OF GENERAL STUDIES

The College of General Studies offers off-campus credit and non-credit courses in any field in which there is sufficient demand and for which instructional facilities can be made available. These courses will meet at the time and place most convenient for the students enrolled and may begin at any time of the year.

The College also provides degree-granting divisions for mature adults whose background and experience is such that they should be matriculated in a division designed to meet their special needs.

The Division of Community Services provides a program of community educational services such as the George Washington University Reading Clinic and the Government Intern Scholarship Program.

ENTRANCE REQUIREMENTS

Off-Campus Credit Courses.—A simplified procedure for admission and registration in off-campus courses is conducted at the first meeting of the class. Transcripts of previous academic work are not required. Registration is restricted to those whose qualifications would indicate that they are able to carry the course successfully. Admission to an off-campus course does not constitute admission to degree candidacy in the University.

Off-Campus Non-Credit Courses.—In general, off-campus non-credit courses will be open to any individual interested in enrolling. When a non-credit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

THE DIVISION OF UNIVERSITY STUDENTS

The Division of University Students makes the work of the University, in its several colleges and schools, accessible to students 21 years of age or over who are not working toward a degree in this University.

Candidates for degrees in other colleges and universities attending the Summer Sessions of the University are registered in the Division of University Students.

Adequate preparation to undertake the desired courses is required.

THE DIVISION OF SPECIAL STUDENTS

This is a non degree-granting division of the University in which the Director of Admissions may authorize the placement of students in the process of making up entrance deficiencies to degree-granting colleges and schools of the University.

Complete credentials must be submitted and evaluated before a program of studies is approved.

DIVISION OF AIR SCIENCE

The Division of Air Science offers a four-year course, with a total of twenty elective credits toward a degree. It is available to male freshman students who are taking a full-time course leading to an undergraduate degree. In some instances, graduate students are also eligible. Upon successful completion of this course, the commission of Second Lieutenant in the United States Air Force Reserve will be awarded.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100, are planned for the student in the freshman or sophomore year. With the approval of the adviser and the dean, they may also be taken by a junior or senior. In certain instances, they may be taken by a graduate student to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200, are planned for the student in the junior or senior year. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300, are planned primarily for the graduate student. They are open, with the approval of the officer of instruction, to the qualified senior; they are not open to the Junior College student.

In the Law School, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

In the School of Education courses numbered from 301 to 400 are for Doctoral candidates.

INDICATION OF THE AMOUNT OF CREDIT

The number of hours of credit given for the satisfactory completion of a course is in most cases indicated in parentheses after the name of the course.

The University reserves the right to change or withdraw any of the courses of instruction listed.

ACCOUNTING

- 1 *Introductory Accounting* (3) Kennedy
Basic principles underlying accounting records used by single proprietorships; preparation of the work sheet and financial statements. 8:10 A.M.
- 1-2 *Introductory Accounting* (3-3) Benson
Study of basic principles underlying accounting records used by single proprietorships, partnerships, and corporations; preparation of the work sheet and financial statements; introduction to cost accounting and to valuation and income determination problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. Second half begins July 19. 7:10 to 9:00 P.M.
- 101 *Cost Accounting* (3) Benson
Study of the theory and purpose of industrial cost accounting; treatment of the systems of cost control and determination, and the analysis and interpretation of cost data. Emphasis will be on job order cost accounting. Prerequisite: Accounting 1-2. MTWTh 7:00 to 8:05 A.M.
- 111 *Financial Statement Analysis* (3) Kennedy
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; determination and interpretation of trends and ratios. Prerequisite: Accounting 1-2. 9:10 A.M.
- 155 *Business Budgeting* (3) Buckler
Study of the principles, preparation, and administration of a business budget, with emphasis on the importance of the budget to management. Prerequisite: Accounting 1-2. TTh 7:10 to 9:25 P.M.
- 231 *Contemporary Accounting Theory* (3) Kennedy
An intensive study of advanced accounting principles and concepts and of recent theories in connection with the valuation of assets and the determination of income. Prerequisite: Permission of the instructor. MW 6:10 to 8:15 P.M.

AIR SCIENCE AND TACTICS

- 103 *Summer Camp* (required—no college credit) The Staff
Attendance at a six-week Air Force ROTC summer camp at an active Air Force base within the continental United States is mandatory between the junior and senior years. The program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training. Prerequisite: Air Science 101-2.

ART

- 71 *Introduction to the Arts in America* (3) Kline
Painting, architecture, and sculpture in America during the Colonial and Republican periods. 5:10 P.M.

- 72 *Introduction to the Arts in America* (3) Kline
Painting, architecture, and sculpture in America during the mid-nineteenth and the twentieth centuries. 6:10 P.M.
- 177 *Landscape (Drawing and Painting)* (3) The Staff
Drawing and painting in all mediums. Section A: 9:00 to 12:00 A.M.; section B: 1:00 to 4:00 P.M.; section C: 5:30 to 8:30 P.M.
- 178 *Figure, Still Life, and Composition* (3) The Staff
Drawing and painting in all mediums. Section A: 9:00 to 12:00 A.M.; section B: 1:00 to 4:00 P.M.

BIOLOGY

- 1-2 *Survey in Biology* (3-3) Bowman, Munson
A review of the plant and animal kingdoms, with emphasis upon the interdependence of living things and their relations with their environments. Introduction to evolution and heredity, public health, and conservation of natural resources. Material fee, \$5 for each half. Nine-week term. Biology 1 is not prerequisite to Biology 2. Biology 2 begins July 22 and ends August 23. Lectures, laboratories, and field trips. 1:10 to 5:00 P.M.
- 211 *Research in Cytology* (arr.) Bowman
Individual problems for advanced students interested in this field. Hours and credits to be arranged.
- 299 *Thesis* (3) Bowman

BOTANY

- 1 *Structure and Functions of the Flowering Plant* (3) Cantlon
The typical plant as a working mechanism, with emphasis on the general biological significance of plant physiology. Material fee, \$5. Lecture and laboratory—MWF 10:10 to 12:00 A.M. and TTh 10:10 to 11:00 A.M.
- 2 *Survey of the Plant Kingdom* (3) Cantlon
Study of the different kinds of plants, with emphasis on the evolution of the plant kingdom; practice in identifying flowering plants. Botany 1 is not a prerequisite to Botany 2. Material fee, \$5. Lecture and laboratory—MWF 12:10 to 1:00 P.M. and TTh 11:10 A.M. to 1:00 P.M.
- 295 *Research* (arr.) The Staff
Hours and credits to be arranged.
- 299 *Thesis* (3) The Staff

BUSINESS ADMINISTRATION

- 101 *Business Organization and Combination* (3) Owens
Simple and interrelated forms of business enterprise and their control by government. 9:10 A.M.

- 102 *Business Management* (3) Owens
The management movement, organization of an enterprise, principles of management and their application to various departments of an enterprise. 8:10 A.M.
- 105 *Personnel Management in Industry* (3) Barnewall
Organization and work of the personnel department, human relations in business. MTWTh 5:55 to 7:00 P.M.
- 109 *Office Management* (3) Johnson
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. MTWTh 5:55 to 7:00 P.M.
- 131 *Business Finance* (3) Welshans
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2. 10:10 A.M.
- 138 *Investments* (3) Welshans
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1-2. MW 7:10 to 9:25 P.M.
- 141 *Principles of Marketing* (3) Barnewall
A survey of marketing, giving particular attention to consumption, retailing, wholesaling, and sales management; the entire marketing structure and its relation to the total economy. Prerequisite: Economics 1-2. MWF 11:10 A.M. to 12:35 P.M.
- 147 *Advertising* (3) Barnewall
Advertising as a function of marketing and merchandising; evaluation, purchase, criticism, and control of advertising; uses and limitations of advertising as a tool of management. TTh 7:10 to 9:25 P.M.
- 232 *Seminar in Business Finance* (3) Welshans
Research in advanced financial problems. TTh 8:10 to 10:00 P.M.
- 291 *Seminar in Business Management* (3) Owens
Research on various phases of management, including business, industrial, and personnel management. MW 8:10 to 10:00 P.M.
- 299 *Thesis* (3) The Staff

CHEMISTRY

- †11-12 *General Chemistry* (4-4) Harkness, White
Chemistry 11-12 is an elementary course in general chemistry. Prerequisite: one year of high school algebra. Students with credit for one term of general chemistry (college level) may enter Chemistry 12 on July 22. Laboratory fee, \$15 for each half. Nine-week term ending August 23. 8:30 A.M. to 1:20 P.M.

† A dagger preceding an odd-numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

- 21 *Qualitative Inorganic Analysis* (4) Vincent
Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, \$15. Eight-week term. TWThF 1:10 to 5:00 P.M.

- †151-52 *Organic Chemistry* (4-4) Wrenn, Schmidt
Chemistry of the compounds of carbon. Credit is not given for Chemistry 151 until Chemistry 152 is completed. Prerequisite: Chemistry 21. Chemistry 151—laboratory fee, \$9; lecture (3), laboratory (1). Chemistry 152—laboratory fee, \$15; lecture (2), laboratory (2). Students who have credit for Chemistry 151 may enter Chemistry 152 on July 22. Nine-week term ending August 23. 8:30 A.M. to 1:20 P.M.

- 295-96 *Research* (arr.) The Staff
Hours, credits and fees to be arranged. Open only to qualified students with advanced training.

- 299-300 *Thesis* (3-3) The Staff
Laboratory fee, \$15 a term. Nine-week term. Hours to be arranged.

ECONOMICS

- 1 *Principles of Economics* * (3) Coogan
Survey of major economic institutions and economic problems in contemporary society. Section A: 9:10 A.M.; section B: MTWTh 5:55 to 7:00 P.M.
- 2 *Principles of Economics* * (3) Burns, Watson
Survey of major economic institutions and economic problems in contemporary society. Section A: 10:10 A.M.; section B: 7:10 P.M.
- 101 *Economic Theory* (3) Watson
Introduction to formal economic theory; advanced analysis of demand and supply relations. MTWTh 8:10 to 9:15 P.M.
- 121 *Money and Banking* (3) Coogan
Theory of money, credit, and banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. MTWTh 7:55 to 9:00 A.M.
- 166 *Comparative Systems of Economic Reform* (3) Watson
Analysis of the major theories of economic and social reform, with special attention to their origins and backgrounds. MTWTh 5:55 to 7:00 P.M.
- 181 *International Economics* (3) Schmidt
Survey of world economics; theories of international trade; analysis of international economic problems; the international organizations. 9:10 A.M.

* Economics 1-2 is prerequisite to all other courses in Economics.

† A dagger preceding an odd-numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

182 *International Economics* (3)

Continuation of Economics 181. MTWTh 5:55 to 7:00 P.M.

213 *Economic Thought in the Twentieth Century* (3) Burns

The writings of the principal economists since Marshall. MW 5:10 to 7:00 P.M.

251 *Theories of Economic Development* (3)

Growth and change in economic activity; capital accumulation; innovations in technology and business organization. TTh 6:10 to 8:00 P.M.

EDUCATION

PRE-SESSION

June 14 to July 2

109 *Learning and Teaching* (3)

Ruffner

For the general student as well as the prospective teacher. Nature of learning approached through the study of actual classroom situations. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.

220 *Intermediate Grade Education* (3)

Holliday

A study of the curriculum and methods of teaching in the intermediate grades based upon a growing understanding of the child and his environment. 9:00 to 11:00 A.M.; conference hour, 11:00 A.M.; small group discussions and field work in the afternoon.

255 *Secondary Education* (3)

Root

Current proposals for the reorganization of secondary education. 9:00 to 11:00 A.M.; conference hour, 11:10 A.M.; small group discussions and field work in the afternoon.

SPECIAL SIX-WEEK SESSION

First Half—July 6 to July 23

110 *Learning and Teaching* (3)

Ruffner

For the general student as well as the prospective teacher. Nature of teaching approached through the study of actual classroom situations. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.

120 *Elementary School Arithmetic* (3)

Woodson

Content, materials, and methods. 9:00 to 11:00 A.M.; conference hour, 11:00 A.M.; small group discussions and field work in the afternoon.

256 *Secondary Education* (3)

Root

Current problems in each of the subject-matter fields. 9:00 to 11:00 A.M.; conference hour, 11:10 A.M.; small group discussions and field work in the afternoon.

Second Half—July 26 to August 13

- 121 *Society and the School* (3) Angel
For the general student as well as the prospective teacher. The local, national, and international roles of education; cooperation of the school with other community agencies. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.
- 225 *Elementary School Reading* (3) Coleman
Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic. 9:00 to 11:00 A.M.; conference hour, 11:10 A.M.; small group discussions and field work in the afternoon.
- 231 *Secondary School Classroom Procedures* (3) Bish
Survey of current classroom practices with particular attention to teaching aids, review of recent literature. 9:00 to 11:00 A.M.; conference hour, 11:10 A.M.; small group discussions and field work in the afternoon.

Full Period—July 6 to August 13

- 209 *Child Growth and Development* (3) Jenkins
Basic factors in human growth and development and their relation to learning and teaching. Related practical experience in studying children; class analysis of procedures and results. MW 6:40 to 9:00 P.M.; conference hours, MW 6:00 P.M.
- 212 *Evaluation in Education* (3) Ruffner
Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses, each student develops solutions for evaluation problems related to his work situation. TTh 6:40 to 9:00 P.M.; conference hours, 6:00 P.M.
- 218 *Contemporary Problems in Education* (3) Jarman
Social foundations of education—a study of the forces that shape the policies and offerings of the school. 9:10 A.M.; conference hours, T 10:20 A.M. and Th 11:30 A.M.
- 272 *The Teacher and School Supervision* (3) Fox
Nature, organization, human relationships, and techniques. 10:20 to 11:20 A.M.; conference hours, T 9:10 A.M. and Th 2:00 P.M.
- 276 *Seminar: Public Relations in School Administration* (3) Root
Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy-making. MW 6:40 to 9:00 P.M.; conference hours, MW 6:00 P.M.
- 295 *Educational Research Methods and Procedures* (3) Fox
Required of all Master's candidates following Plan 2. 1:00 to 2:00 P.M.; conference hours, MW 2:10 P.M. and F 9:10 A.M.

297 Reading in Education

The Staff

To assist those preparing for the comprehensive examination. No credit toward degree requirements. Tuition fee, \$15. 4:10 P.M.

Psychology 228 Seminar: Techniques of Counseling (3)

Dreese

Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisites: recent previous course in counseling and guidance and familiarity with individual analysis methods. 10:20 to 11:20 A.M.

299-300 Thesis (3-3)

The Staff

371 Educational Administration I (6)

Fox

A workshop course for advanced students on the doctoral level. Others may be admitted by permission of the instructor. For detailed description, see special announcement.

POST-SESSION

August 16 to September 3

122 Society and the School (3)

Angel

For the general student as well as the prospective teacher. Organization and operation of schools; principles and functions. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.

207 Curriculum Materials (3)

Bish

For experienced teachers. The study and comparison of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to student's own situation. 9:00 to 11:00 A.M.; conference hour, 11:10 A.M.; small group discussions and field work in the afternoon.

ENGLISH •

ENGLISH COMPOSITION

A English Practice (3)

Moore and Staff

Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1. Section A: 11:10 A.M.; section B: 8:10 P.M.

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

All pre-Columbian College students (who are required to take two years of Junior College English) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2.

English 1 is prerequisite to all other courses in English.

- B English for Foreign Students (3)** Allee
A course in reading and writing designed to prepare the student for English 1. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. 7:10 P.M.
- 1 English Composition * (3)** Moore and Staff
Review of grammar, exercises in composition, readings. Section A: 11:10 A.M.; section B: 8:10 P.M.
- 2 English Composition * (3)** Moore and Staff
Continuation of English 1. Section A: 10:10 A.M.; section B: 7:10 P.M.
- 11 The Writing of Reports (3)** Turner
Theory and practice in the writing of technical reports. 6:10 P.M.

ENGLISH LITERATURE ‡

- 51 Introduction to English Literature (3)** Allee
A historical survey. From beginnings to 1800. 9:10 A.M.
- 52 Introduction to English Literature (3)** Stone
A historical survey. Literature since 1800. 7:10 P.M.
- 122 Chaucer (3)** Stone
MTWTh 5:55 to 7:00 P.M.
- 135 Shakespeare (3)** Tupper
The comedies and histories. 11:10 A.M.
- 184 The English Drama (3)** Tupper
Drama from 1660 to the present day. 10:10 A.M.
- 266 Studies in the Twentieth Century (3)** Linton
TTh 8:10 to 10:00 P.M.

AMERICAN LITERATURE ‡

- 71 Introduction to American Literature (3)** Bolwell
A historical survey. From beginnings to 1860. 10:10 A.M.
- 72 Introduction to American Literature (3)** Bolwell
A historical survey. Literature since 1860. 11:10 A.M.

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

‡ All pre-Columbian College students (who are required to take two years of Junior College English) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2.

‡ English 1 is prerequisite to all other courses in English.

‡ All pre-Columbian College students (who are required to take two years of Junior College English) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2.

English 51-52, 71-72, 91-92, or Classical Languages and Literatures 71-72 is prerequisite to all second-group courses.

GEOGRAPHY

- 51 *Introduction to Geography* (3) Campbell
A study of the attributes of place; patterns and associations of physical and cultural earth-features. 8:10 A.M.
- 52 *World Regions* (3) Westermann
A study of the characteristics of regions; description and interpretation of physical-cultural complexes; evaluation of regional differences as they affect the distribution and activities of man. 9:10 A.M.
- 71 *Political and Cultural Geography* (3) Koenig
A study of the geopolitical and cultural bases of international policy. Special emphasis upon the United States—her position and her obligations. MTWTh 11:10 A.M. to 12:15 P.M.
- 171 *Field Geography* (3) Quam
Field study methods; training in mapping and analysis techniques for both rural and urban areas. Prerequisites: Geography 51 and 52. Transportation fee, \$15. S 8:10 A.M. to 4:00 P.M.
- 231 *Seminar: International Boundary Problems* (3) Fischer
An analysis of the factors involved in some current international boundary disputes. Senior or graduate status is required. TTh 6:10 to 8:00 P.M.
- 295-96 *Research* (3-3) The Staff
Hours to be arranged.
- 299-300 *Thesis* (3-3) The Staff

GERMANIC LANGUAGES AND LITERATURES

- †1-2 *First-year German* (3-3) Rogers, Legner
The essentials of German grammar, translation of easy prose. Second half begins July 19. Section A: 9:10 to 11:00 A.M.; section B: 6:10 to 8:00 P.M.
- †3-4 *Second-year German* (3-3) Rogers
Selections from modern German prose, review of grammar. Prerequisite: German 1-2 or two years of high-school German. Second half begins July 19. 6:10 to 8:00 P.M.
- 107 *German Readings for Non-major Students** King
Designed primarily for graduate students preparing for reading examinations. Undergraduates admitted with the permission of the instructor. No academic credit for graduate students. Three hours credit for undergraduates. MTWTh 5:55 to 7:00 P.M.

* Tuition fee, \$45.

† A dagger preceding an odd-numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

HISTORY *

- 39 *The Development of European Civilization to 1648* (3) Kayser
Primarily for freshmen. The political, social, economic, and cultural history of the Old World from ancient times through the Reformation period. 7:00 A.M.
- 40 *The Development of European Civilization since 1648* (3) Davis
Primarily for freshmen. The political, social, economic, and cultural history of the Old World from the Reformation period to the present. 7:10 P.M.
- 71 *The Development of the Civilization of the United States to 1865* (3) Koenig
Primarily for sophomores. The political, social, economic, and cultural forces of the United States from the period of discovery through the Civil War. 9:10 A.M.
- 72 *The Development of the Civilization of the United States since 1865* (3) Haskett
Primarily for sophomores. The political, social, economic, and cultural forces of the United States in their world setting from 1865 to the present. 6:10 P.M.
- 130 *Nationalism* (3) Kayser
The historical evolution of modern nationalism. 8:00 A.M.
- 147 *Economic History of Europe* (3) Gray
A survey from ancient times to the present day. 9:10 A.M.
- 152 *English History since 1689* (3) Haskett
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world since the "Glorious Revolution". 7:10 P.M.
- 164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. 6:10 P.M.
- 173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. 10:10 A.M.
- 181 *Diplomatic History of the United States* (3) Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. To 1871. 7:00 A.M.

* History 39-40 is prerequisite to courses 130 through 152; History 71-72, to courses 164 through 182.

- 182 *Diplomatic History of the United States* (3) Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. Since 1871. 8:00 A.M.
- 199-200 *Proseminar: the Literature and Method of History* (3-3) The Staff
Limited to majors in History. Hours to be arranged.
- 291-92 *Seminar* (3-3) The Staff
Prerequisite: approval of the Department. Hours to be arranged.
- 299-300 *Thesis* (3-3) The Staff
Required of all candidates for the Master's degree specializing in history. Hours to be arranged.

LAW

FIRST SESSION

- 101 *Legal Method and Legal System* (4) Orentlicher
Introduction to study of substantive and procedural law dealing with basic concepts. Training in method and technique of case law, based upon modern records in state and federal cases, followed by practice in the use of law books and legal writing. Importance of language in law, legal reasoning, statutory interpretation, and use of precedents, under the doctrines of stare decisis, law of the case, and res judicata. Background development of Anglo-American legal system; organization of the judiciary and the bar, stressing enforcement of ethical standards. 5:50 to 7:40 P.M.
- 138x *Real Property* (4) Jones
Historical background of estates and conveyances; possessory estates; concurrent estates; natural rights; easements, profits, and licenses; covenants running with the land; adverse possession and adverse user. 5:50 to 7:40 P.M.
- 205 *Civil Procedure* (4) Burke, Stengel
Function and composition of pleadings, including their relation to proof. Emphasis is upon reforms, as exemplified by modern code provisions and the Federal Rules of Civil Procedure. Section A: 9:10 to 11:00 A.M.; section B: 5:50 to 7:40 P.M.
- 312x *Restitution* (2) Mayo
Legal remedies for restitution of benefits obtained or conferred by performance of contract, misrepresentation, mistake, and coercion. Section A: 11:10 to 12:00 A.M.; section B: MTh 5:50 to 8:05 P.M.
- 337 *Future Interests* (2) Benson
Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities. Section A: 12:10 to 1:00 P.M.; section B: TF 5:50 to 8:05 P.M.

- 375 *Taxation-Federal Income* (4) Fey
Federal income taxation, including excess profits; imposition and computation problems. 5:50 to 7:40 P.M.

- 381 *Trusts* (4) Weaver
Creation, elements, administration, enforcement, and termination of trusts. Liabilities to and of third persons. Resulting and constructive trusts. 9:10 to 11:00 A.M.

SECOND SESSION

- 123x *Criminal Law and Procedure* (4) Cooper
Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. 5:50 to 7:40 P.M.
- 218 *Local Government Law* (2) Mallison
Types and objectives of municipal, county, and special purpose local governmental units; inter-governmental relations; original organization and changes; lawmaking by local bodies; community planning and development; legal responsibility of local governmental units. 12:10 P.M.
- 223x *Domestic Relations* (2) Mallison
Marriage, annulment, and divorce; rights of husband and wife; rights of parent and child; infants. 9:10 A.M.
- 234 *Evidence* (4) Fryer, Weston
Functions of court and jury; witnesses; hearsay, opinion, and circumstantial evidence; proof of authenticity and contents of writings. Section A: 10:10 to 12:00 A.M.; section B: 5:50 to 7:40 P.M.
- 250 *Conveyances and Wills* (4) Cunningham
Land contracts, conveyances, mortgages, recording; formation and revocation of wills; testate and intestate succession. 5:50 to 7:40 P.M.
- 270 *Corporations* (4) Davison
Legal requirements as to contributions of capital; powers and rights of corporations, corporate officials, and shareholders. 10:10 to 12:00 A.M.
- 315x *Conflict of Laws* (4) Collier
Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations. 5:50 to 7:40 P.M.
- 413 *Labor Law Practice* (2) Merrifield
The role of the lawyer in the negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration and under federal labor legislation, such as the Labor Management Relations Act and the Fair Labor Standards Act. MTH 5:50 to 8:05 P.M.

MATHEMATICS

- 3 *College Algebra* (3) The Staff
Prerequisite: one year each of high school algebra and high school geometry. Section A: 9:10 A.M.; section B: 7:10 P.M.
- 6 *Plane Trigonometry* (3) The Staff
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3. Section A: 10:10 A.M.; section B: 6:10 P.M.
- 12 *Analytic Geometry* (3) The Staff
Prerequisite: Mathematics 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry. Section A: 11:10 A.M.; section B: 7:10 P.M.
- 19 *Differential Calculus* (3) The Staff
Prerequisite: Mathematics 12. Section A: 10:10 A.M.; section B: 6:10 P.M.
- 20 *Integral Calculus* (3) The Staff
Prerequisite: Mathematics 19. Section A: 11:10 A.M.; section B: 7:10 P.M.
- 123 *Theory of Equations* (3) Johnston
Prerequisite: Mathematics 20. 6:10 P.M.

PHARMACY

- 192 *Hospital Pharmacy* (1) Cooper
Prescription practice in the University Hospital. Prerequisite: Pharmacy 102. Laboratory (3 hours)—hours to be arranged.
- 194 *Manufacturing Pharmacy* (3) Cooper
The manufacture of bulk pharmaceuticals in the University Hospital pharmacy. Elective for seniors. Lecture (1 hour)—afternoon; laboratory (6 hours)—hours to be arranged.

PHILOSOPHY

- 51 *Introduction to Philosophy* (3) Womack
A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. TWTh 11:10 A.M. to 12:35 P.M.
- 52 *Introduction to Philosophy* (3) Womack
Introduction to issues in social philosophy. This course may be taken concurrently with Philosophy 51 or before Philosophy 51. TWTh 7:10 to 8:35 P.M.
- 172 *American Philosophy from Royce to Dewey* (3) Womack
A survey of the thought of Royce, Peirce, James, Santayana, and Dewey. No prerequisites in Philosophy are necessary for this course. TWTh 5:35 to 7:00 P.M.

PHYSICS

5 *General Physics* (3)

Koehl and Staff

An introduction to the phenomena of light, heat, force, energy, and the properties of matter. This course may be taken as a terminal course by non-science students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, \$9. Lecture—MW 11:10 A.M.; recitation—TTh 11:10 A.M.; laboratory—TTh 2:10 to 4:30 P.M.

7 *General Physics* (3)

Koehl and Staff

Elementary electricity and magnetism. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, \$9.

Section	Lecture	Recitation	Laboratory
A.....	TTh 1:10 P.M.....	MW 1:10 P.M.....	MW 2:10- 4:30 P.M.
B.....	TTh 6:10 P.M.....	MW 6:10 P.M.....	TTh 8:10-10:30 P.M.
C.....	TTh 6:10 P.M.....	MW 7:10 P.M.....	MW 8:10-10:30 P.M.

8 *General Physics* (3)

Foundation of modern physics—the experimental evidence concerning light waves and quanta, X-rays, and radiowaves; electrons, protons, and other elementary particles; atomic and molecular structure; and nuclear physics. Prerequisite: Physics 6 and 7. Lecture—MWF 7:10 P.M.; recitation—TTh 7:10 P.M.

POLITICAL SCIENCE ‡

9 *Government of the United States* (3)

West, Fuller

Fundamental principles of Political Science. The structure, powers, and operation of the federal government: Congress, the President and the Supreme Court. Section A: 10:10 A.M.; section B: 7:10 P.M.

10 *Government of the United States* (3)

Ludden

Analysis of the structure, powers, and operation of state and local governments. Political parties, pressure groups, and civil rights. Major functions of government at federal, state, and local levels. MTWTh 5:55 to 7:00 P.M.

113 *Political Problems of the British Commonwealth of Nations* (3)

Kraus

A discussion of the transformation of the colonial empire into the modern Commonwealth, questions of equal partnership, and governments and policies in the principal dominions. MTWTh 5:55 to 7:00 P.M.

117 *Political Theory: the Growth of Political Thought in the West* (3)

Kraus

From Plato through the scholastic writers. 11:10 A.M.

* This prerequisite may be waived for students who have credit for a high school physics course which included individual laboratory work, providing they pass the qualifying examination given at the dates specified in the University calendar.

‡ Political Science 9-10 is prerequisite to courses 113 through 171.

- 121 *The Constitution of the United States* (3) West
The judicial power of the federal courts in constitutional interpretation. Special attention to state and federal relationships, taxation, and legislative-executive-judicial relationships. 9:10 A.M.
- 127 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Duff
MTWTh 5:55 to 7:00 P.M.
- 146 *Political Pressures and Public Reactions* (3) Ludden
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. MTWTh 7:10 to 8:15 P.M.
- 171 *International Politics* (3) Ludden
Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation. 10:10 A.M.
- 213 *Readings in Comparative Government* (3) Kraus
Readings and group discussion in the field of comparative political and administrative institutions, with particular attention to such topics as legislatures, executive departments, bureaucracy, political parties, etc. TTh 8:10 to 10:00 P.M.
- 257 *Public Policy Formulation and Administration* ‡ (3) Johnson
Case studies illustrating policy and planning processes in their relation to administration of public programs. MW 8:10 to 10:00 P.M.
- 265 *Workshop in Public Administration* * (3) Johnson
Training in conference methods of presenting and resolving public administrative problems. TTh 6:10 to 8:00 P.M.
- 271 *Problems of International Politics and Organization* (3) Hadsel
A seminar designed to develop techniques of research in recent international affairs, and to examine major developments in international politics and organizations, such as the United Nations and specialized agencies. MW 8:10 to 10:00 P.M.
- 299 *Thesis* (3) The Staff

PSYCHOLOGY ‡

- 1 *General Psychology* * (3) Caldwell, Fox
The fundamental principles underlying human behavior. Section A: TWTh 11:10 A.M. to 12:35 P.M.; section B: MWF 5:35 to 7:00 P.M.
- 29 *Child Psychology* (3) Fox
A genetic approach to the study of the child. MWF 7:10 to 8:35 P.M.

* Primarily for majors in the School of Government.

‡ Psychology 1 is prerequisite to all other courses in Psychology.

- 98 *Abnormal Psychology* (3) Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. MWF 11:10 A.M. to 12:35 P.M.
- 129 *Introduction to Counseling and Guidance* (3) Faith
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personnel counseling. TTh 7:10 to 9:25 P.M.
- 131 *Psychological Tests* (3) Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$5. TTh 11:10 A.M. to 1:25 P.M.
- 146 *Psychology of Human Relations* (3) Mosé
The psychological basis for understanding and improving personal and group relations. Consideration of case studies from a wide variety of life situations. TTh 5:45 to 8:00 P.M.
- 151 *Social Psychology* (3) Tuthill
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, and occupation. The psychological basis of race prejudice, nationalism, and war. MWF 5:35 to 7:00 P.M.
- 156 *Psychology of Propaganda and Public Opinion* (3) Tuthill
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity to propaganda, psychological warfare. MW 7:10 to 9:25 P.M.
- 193 *Readings in Psychology* (3) The Staff
Supervised readings on specific topics in psychology, with conferences for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality point index of 3.00 or higher. Permission of staff member under whom course is to be taken is necessary. Hours to be arranged.
- 205 *Field Work in Psychology* (3) The Staff
Supervised field work in agencies providing psychological service. Admission by permission of the Executive Officer of the Department. Hours to be arranged.
- 207 *Readings in Psychology for Graduate Students* (3) The Staff
Supervised readings with conferences on specified topics in psychology. Permission of staff member under whom course is to be taken is necessary. Hours to be arranged.
- 225 *Seminar: Mental Hygiene* (3) Caldwell
A study of mental health problems with special attention to programs of prevention. MW 7:10 to 9:00 P.M.

- 245 *Seminar: Employee Motivation and Morale* (3) Mosé
Application of the principles of primary group functioning and group-centered administration to the problem of motivating employees, building morale, and strengthening human relations. Emphasis is upon use of group dynamics in supervision and leadership. TWTh 8:10 to 10:00 P.M.
- 295 *Research in Psychology* (arr.) The Staff
Hours and credits to be arranged.
- 299 *Thesis* (3) The Staff

SPECIAL SIX-WEEK SESSION

- 228 *Seminar: Techniques of Counseling* (3) Dreese
Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods. 10:20 to 11:20 A.M. (See "Education".)

RELIGION

- 10 *The New Testament* (3)
A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special consideration given to life in the primitive Christian Church. TWTh 5:35 to 7:00 P.M.
- 59 *History of Religions* (3)
Primitive and Eastern religions, ancient national religions, Confucianism, Taoism, Buddhism and sects, Hinduism, Shintoism—considering environment, personalities, religious thought, cultus, ethics, and modern trends. TWTh 11:10 A.M. to 12:35 P.M.

ROMANCE LANGUAGES AND LITERATURES

FRENCH

- †1-2 *First-year French* (3-3) The Staff
For beginners. Grammar, composition, drill in pronunciation, translation of modern French prose. Second half begins July 19. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.
- †3-4 *Second-year French* (3-3) The Staff
Advanced grammar, composition, reading in modern French prose, oral practice, introduction to French civilization. Prerequisite: French 1-2 or two years of high school French. Second half begins July 19. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

† A dagger preceding an odd-numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

SPANISH

†1-2 *First-year Spanish* (3-3)

The Staff

For beginners. Grammar, composition, drill in pronunciation, reading modern Spanish prose. Second half begins July 19. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

†3-4 *Second-year Spanish* (3-3)

The Staff

Advanced grammar and composition, reading modern Spanish prose, oral practice, introduction to Hispanic civilization. Prerequisite: Spanish 1-2 or two years of high school Spanish. Second half begins July 19. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

SLAVIC LANGUAGES AND LITERATURES

RUSSIAN

1-2 *First-year Russian* (3-3)

Yakobson

Beginner's course in fundamentals of grammar and pronunciation, with graded reading, oral drill, and written practice. Second half begins July 19. 6:10 to 8:00 P.M.

SOCIOLOGY *

1 *Introductory Sociology* (3)

Lavel, ———

The origin and development of culture, man's social nature, types of groups and social institutions, social processes, social change, and social control. Section A: 9:10 A.M.; section B: MWF 5:35 to 7:00 P.M.

132 *Marriage* (3)

The reasons for marriage, marriage laws, mate selection, courtship, husband-wife relations, factors in marriage adjustment; marriage prediction and counseling. MWF 7:10 to 8:35 P.M.

161 *Social Stratification: Class and Status* (3)

Lavell

The nature of the class structure, patterns of status and prestige relations in American society, and an analysis of differential class behavior and comparative social structures. 10:10 A.M.

295-96 *Research* (arr.)

The Staff

Time and credit to be arranged.

299-300 *Thesis* (3-3)

The Staff

SPEECH

A *Speech Clinic*

Pettit and Staff

Individual or group lessons, without academic credit, for such speech difficulties as lipping, cleft palate, articulatory problems, and stuttering. Fee: \$6 per hour for individual lessons; \$4 per hour for group lesson. Time to be arranged.

* Sociology 1 is a prerequisite to all other courses.

† A dagger preceding an odd numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

- B American Speech for Foreign Students** Pettit and Staff
Individual or group instruction, without academic credit, in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Fee: \$6 per hour for individual lesson; \$4 per hour for group lesson. Time to be arranged.
- 1 Effective Speaking (3)** Leggette and Staff
Preparation and delivery of extempore speeches; developing confidence and poise; body and voice control; selecting and organizing material. Recording fee: \$3. Section A: 8:10 A.M.; section B: 7:10 P.M.
- 2 Extempore Speaking (3)** Stevens
A continuation of Speech 1, which is prerequisite, with emphasis on organization of material and elementary principles of persuasions. 10:10 A.M.
- 11 Training the Speaking Voice (3)** Leggette and Staff
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English and the standards of speech. Recording fee: \$3. Section A: 9:10 A.M.; section B: MTWTh 5:55 to 7:00 P.M.
- 32 Oral Reading (3)** Leggette
Reading to others; theory and practice of interpreting the printed page. Prerequisite: Speech 11. Recording fee: \$3. 10:10 A.M.
- 131 Group Discussion and Conference Leadership (3)** Stevens
The process of thinking and problem solving in committees and small groups. Methods of leading discussions and conferences. Admission by permission of the instructor. 11:10 A.M.
- 177-78 Clinical Practice in Speech Therapy (1-1)** Pettit
Case work in remedial speech. Prerequisite: Speech 175. Time to be arranged.
- 183-84 Clinical Practice in Hearing Therapy (1-1)** Pettit
Case work with persons handicapped with hearing losses. Prerequisite: Speech 182. Time to be arranged.

STATISTICS

- 51 Introduction to Business and Economic Statistics (3)** Johnson
Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data. Consideration of characteristic values, measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, \$6. Lecture—MTWTh 7:10 P.M. Laboratory—TTh 8:10 to 9:50 P.M.

52 Mathematics of Finance (3)

Johnson

Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation, building and loan associations. Prerequisite: one entrance unit in algebra. MTWTh 5:55 to 7:00 P.M.

†91-92 Principles of Statistical Method (3-3)

Weida

This course emphasizes the meaning, uses, and applications of variates and attributes, measurement and enumeration, averages and dispersion, frequency distributions and their characteristics, errors of measurement and their control, index numbers, trends, cyclical relatives, purposive and random sampling in theory and practice with applications. Prerequisite: one entrance unit in algebra. Students desiring to register for one-half of this course must obtain permission of the instructor. Second half begins July 19. Laboratory fee, \$6 for each half. Lecture—MTWTh 6:00 to 8:00 P.M. Laboratory—MW 8:10 to 10:00 P.M.

117 Analysis of Variance (3)

McCall

The analysis of variance and covariance to segregate factors producing significant variation, a method to estimate experimental error, multiple classification with unequal class frequencies. Prerequisite: Statistics 91-92 or the equivalent. MTWTh 5:55 to 7:00 P.M.

118 Correlation and the Chi-Square Test (3)

McCall

Advanced study of simple, partial, and multiple correlation. Rank correlation, the method of contingency, and the problem of normal and non-normal populations. Tests of independence, likeness, and goodness of fit. Prerequisite: Statistics 91-92 or the equivalent. MTWTh 7:10 to 8:15 P.M.

ZOOLOGY**1-2 Introduction to Zoology (4-4)**

Mortenson, Desmond

An introduction to the study of the structure, functions, and relations of animals, and of the fundamental biological principles involved. Material fee, \$9 for each half. Nine-week term. Zoology 2 begins July 22 and ends August 23. Lecture—6:10 P.M.; laboratory—7:10 to 10:00 P.M.

145 Introduction to Vertebrate Embryology (1)

Hansen

The origin and early development of the individual and the formation of organ systems. Emphasis is placed on the frog, chick, and pig, with reference to the human embryo. Material fee, \$9. Eight-week term. Lecture—MW 7:10 P.M.; laboratory—MW 8:10 to 10:00 P.M. and TTh 7:10 to 9:00 P.M.

295 Research (3)

The Staff

Investigation of special problems. Hours to be arranged.

299 Thesis (3)

The Staff

† A dagger preceding an odd-numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

HOURLY SCHEDULE •
MORNING CLASSES

7:10	8:10	9:10	10:10	11:10
Acct 101 (MTWTh 7-8:05) Econ 121 (MTWTh 7:55-9) Hist 39 (at 7) Hist 181 (at 7)	Acct 1 Bus Adm 102 Chem 11-124 (8:30-1:20) Chem 151-524 (8:30-1:20) French 1-2A8 (to 10) French 3-4A8 (to 10) Geog 51 Geog 171 (S to 4) Hist 130 (at 8) Hist 182 (at 8) Span 1-2A8 (to 10) Span 3-4A8 (to 10) Speech 1A	Acct 111 Art 177A (9-12) Art 178A (9-12) Bus Adm 101 Econ 1A Econ 181 Eng 51 Geog 52 German 1-2A8 (to 11) Hist 71 Hist 147 Math 3A Pol Sc 121 Soc 1A Speech 11A	Bot 1 (MWF to 12; TTh to 11) Bus Adm 131 Econ 2A Eng 2A Eng 71 Eng 184 Hist 173 Math 6A Math 10A Pol Sc 9A Pol Sc 171 Soc 161 Speech 2 Speech 32	Bot 2 (TTh to 1) Bus Adm 141 (MWF to 12:35) Eng A-Sect A Eng 1A Eng 72 Eng 135 Geog 71 (MTWTh to 12:15) Math 12A Math 20A Philos 51 (TWTh to 12:35) Physics 5 lect (MW) Physics 5 rec (TTh) Pol Sc 117 Psych 1A (TWTh to 12:35) Psych 98 (MWF to 12:35) Psych 131 (TTh to 1:25) Relig 59 (TWTh to 12:35) Speech 131

• Classes meet from Monday through Friday unless otherwise indicated. Seminars and research courses for which hours are to be arranged, courses in the Law School and the School of Education will be found under the departmental announcements.

A Nine week term. Second half—July 22 to August 23.

12:10	1:10	2:10
Bot 2 (MWF)	Art 177B (1-4) Art-178B (1-4) Biol 1-2* (to 5) Chem 21 (TWTThF to 5) Physics 7A lect (TTh) Physics 7A rec (MW)	Physics 5 lab (TTh to 4:30) Physics 7A lab (MW to 4:30)

EVENING CLASSES

5:10	6:10	7:10	8:10
Art 71 Art 177C (5:30-8:30) Bus Adm 105 (MTWTh 5:55-7) Bus Adm 109 (MTWTh 5:55-7) Econ 1B (MTWTh 5:55-7) Econ 166 (MTWTh 5:55-7) Econ 182 (MTWTh 5:55-7) Econ 213 (MW to 7) Eng 122 (MTWTh 5:55-7) German 107 (MTWTh 5:55-7)	Acct 231 (MW to 8:15) Art 72 Econ 251 (TTh to 8) Eng 11 French 1-2B‡ (to 8) French 3-4B‡ (to 8) Geog 231 (TTh to 8) German 1-2B‡ (to 8) German 3-4‡ (to 8) Hist 72 Hist 164 Math 6B Math 10B Math 123	Acct 1-2‡ (to 9) Acct 155 (TTh to 9:25) Bus Adm 138 (MW to 9:25) Bus Adm 147 (TTh to 9:25) Econ 2B Eng B Eng 2B Eng 52 Hist 40 Hist 152 Math 3B Math 12B	Bus Adm 232 (TTh to 10) Bus Adm 201 (MW to 10) Econ 101 (MTWTh to 9:15) Eng A—Sect B Eng 1B Eng 266 (TTh to 10) Physics 7B lab (TTh to 10:30) Physics 7C lab (MW to 10:30) Pol Sc 213 (TTh to 10) Pol Sc 257 (MW to 10) Pol Sc 271 (MW to 10) Psych 245 (TTh to 10) Stat 51 lab (TTh to 9:50)

• Nine-week term. Second half—July 22 to August 23.

‡ Second half begins July 19.

EVENING CLASSES (Continued)

5:10	6:10	7:10	8:10
Phil 172 (TWTTh 5:35-7) Pol Sc 10 (MTWTTh 5:55-7) Pol Sc 113 (MTWTTh 5:55-7) Pol Sc 127 (MTWTTh 5:55-7) Psych 1B (MWF 5:35-7) Psych 140 (TTh 5:45-8) Psych 151 (MWF 5:55-7) Relig 10 (TWTTh 5:35-7) Soc 1B (MWF 5:35-7) Speech 11B (MTWTTh 5:55-7) Stat 52 (MTWTTh 5:55-7) Stat 117 (MTWTTh 5:55-7)	Physics 7B lect (TTh) Physics 7B rec (MW) Physics 7C lect (TTh) Pol Sc 26J (TTh to 8) Russian 1-2† (to 8) Span 1-2B† (to 8) Span 3-4B† (to 8) Stat 91-92 lect† (MTWTTh 6-8) Zoo 1-2• lect	Math 20B Phil 52 (TWTTh to 8:35) Physics 7C rec (MW) Physics 8 lect (MWF) Physics 8 rec (TTh) Pol Sc 9B Pol Sc 146 (MTWTTh to 8:15) Psych 29 (MWF to 8:35) Psych 129 (TTh to 9:25) Psych 156 (MW to 9:25) Psych 225 (MW to 9) Soc 132 (MWF to 8:35) Speech 1B Stat 51 lect (MTWTTh) Stat 118 (MTWTTh to 8:15) Zoo 1-2 lab• (to 10) Zoo 145 lect (MW) Zoo 145 lab (TTh to 9)	Stat 91-92 lab† (MW to 10) Zoo 145 lab (MW to 10)

• Nine-week term. Second half—July 22 to August 23.

† Second half begins July 19.

THE CATALOGUE ISSUE

1954-55

THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

VOL. LIII

No. 4

THE CATALOGUE ISSUE

WASHINGTON, D. C.

PUBLISHED IN APRIL
MCMLIV

BY THE UNIVERSITY

THE
AMERICAN
PHYSIOLOGICAL
JOURNAL
PUBLISHED
BY THE
AMERICAN PHYSIOLOGICAL SOCIETY

Vol. 10, No. 1, 1912

Published by the American Physiological Society

THE JOURNAL OF
PHYSIOLOGY

Published by the Cambridge University Press

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THE UNIVERSITY CALENDAR

1954							1955													
July							January							July						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
..	..	..	..	..	1	2	3	..	..	..	..	..	..	1	..	..	..	..	..	1
4	5	6	7	8	9	10	..	2	3	4	5	6	7	8	3	4	5	6	7	8
11	12	13	14	15	16	17	..	9	10	11	12	13	14	15	10	11	12	13	14	15
18	19	20	21	22	23	24	..	16	17	18	19	20	21	22	17	18	19	20	21	22
25	26	27	28	29	30	31	..	23	24	25	26	27	28	29	24	25	26	27	28	29
..	..	..	..	..	..	..	..	30	31	..	..	..	..	..	31	..	..	..	..	..
August							February							August						
1	2	3	4	5	6	7	..	..	1	2	3	4	5	..	1	2	3	4	5	6
8	9	10	11	12	13	14	6	7	8	9	10	11	12	7	8	9	10	11	12	13
15	16	17	18	19	20	21	13	14	15	16	17	18	19	14	15	16	17	18	19	20
22	23	24	25	26	27	28	20	21	22	23	24	25	26	21	22	23	24	25	26	27
29	30	31	..	..	..	..	27	28	..	..	..	..	..	28	29	30	31	..	..	..
September							March							September						
..	..	..	1	2	3	4	..	..	1	2	3	4	5	..	..	..	..	1	2	3
5	6	7	8	9	10	11	6	7	8	9	10	11	12	4	5	6	7	8	9	10
12	13	14	15	16	17	18	13	14	15	16	17	18	19	11	12	13	14	15	16	17
19	20	21	22	23	24	25	20	21	22	23	24	25	26	18	19	20	21	22	23	24
26	27	28	29	30	..	..	27	28	29	30	31	..	..	25	26	27	28	29	30	..
October							April							October						
..	..	..	..	..	1	2	..	..	..	..	..	1	2	..	..	..	..	..	..	1
3	4	5	6	7	8	9	3	4	5	6	7	8	9	2	3	4	5	6	7	8
10	11	12	13	14	15	16	10	11	12	13	14	15	16	9	10	11	12	13	14	15
17	18	19	20	21	22	23	17	18	19	20	21	22	23	16	17	18	19	20	21	22
24	25	26	27	28	29	30	24	25	26	27	28	29	30	23	24	25	26	27	28	29
31	..	..	..	..	..	..	..	..	..	..	..	..	..	30	31	..	..	..	..	..
November							May							November						
..	1	2	3	4	5	6	1	2	3	4	5	6	7	..	..	1	2	3	4	5
7	8	9	10	11	12	13	8	9	10	11	12	13	14	6	7	8	9	10	11	12
14	15	16	17	18	19	20	15	16	17	18	19	20	21	13	14	15	16	17	18	19
21	22	23	24	25	26	27	22	23	24	25	26	27	28	20	21	22	23	24	25	26
28	29	30	..	..	..	..	29	30	31	..	..	..	..	27	28	29	30	..	..	..
December							June							December						
..	..	..	1	2	3	4	..	..	..	1	2	3	4	..	..	..	..	1	2	3
5	6	7	8	9	10	11	5	6	7	8	9	10	11	4	5	6	7	8	9	10
12	13	14	15	16	17	18	12	13	14	15	16	17	18	11	12	13	14	15	16	17
19	20	21	22	23	24	25	19	20	21	22	23	24	25	18	19	20	21	22	23	24
26	27	28	29	30	31	..	26	27	28	29	30	..	..	25	26	27	28	29	30	31

THE UNIVERSITY CALENDAR

1954-55

Date	Day	Occasion
1954 FALL TERM:		
Sept. 20	Monday	Orientation Assembly for all new students
Sept. 21	Tuesday	Freshman tests Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Sept. 22	Wednesday	Curriculum Assembly for all new students
Sept. 23 and 24	Thursday and Friday	Meeting of the University Faculty
Sept. 27	Monday	Pre-advising for all new students
Oct. 7	Thursday	Registration*
Oct. 8	Friday	Academic year begins*
Oct. 15	Friday	Stated meeting of the Board of Trustees
Nov. 11	Thursday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in February
Nov. 25-27	Thursday through Saturday	Last day on which candidates may file dissertation subjects for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred the following June
Nov. 30	Tuesday	Fall Convocation. Holiday
Dec. 9	Thursday	Thanksgiving recess
Dec. 20-Jan. 1	Monday through Saturday	Meeting of the Academic Council
1955 Jan 3	Monday	Stated meeting of the Board of Trustees
		Christmas recess
		Classes resume
		Last day for receiving theses of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in February

* In the School of Medicine, registration is conducted September 16 and 17, classes begin September 20.

THE UNIVERSITY CALENDAR—Continued

Date	Day	Occasion
Jan. 3	Monday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Juridical Science, Doctor of Education, and Doctor of Business Administration to be conferred in February.
Jan. 19	Wednesday	Last day of classes for the Fall Term
Jan. 24-Feb. 1 ..	Monday through Tuesday	Examination period
SPRING TERM: Feb. 2	Wednesday	Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Feb. 3 and 4 ..	Thursday and Friday	Registration
Feb. 7	Monday	Classes resume for the spring term
Feb. 10	Thursday	Stated meeting of the Board of Trustees
Feb. 18	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in June
Feb. 22	Tuesday	Winter Convocation. Holiday
March 1	Tuesday	Applications for fellowships for 1955-56 should be filed
March 10	Thursday	Stated meeting of the Board of Trustees
March 29	Tuesday	Meeting of the University Faculty
April 1	Friday	Applications for scholarships for 1955-56 should be filed
April 14	Thursday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in June
April 8-13	Friday through Wednesday	Easter recess
May 1	Tuesday	Meeting of the Academic Council
May 6	Friday	Last day for receiving theses of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in June

THE UNIVERSITY CALENDAR—Continued

Date	Day	Occasion
May 12	Thursday	Annual meeting of the Board of Trustees
May 18	Wednesday	Last day of classes for the spring term
May 23-31 ..	Monday through Tuesday	Spring term examination period
June 5	Sunday	Baccalaureate Sermon
June 8	Wednesday	Commencement
SUMMER TERM:*		
June 20	Monday	Registration for the eight-week term
June 21	Tuesday	Classes begin
July 4	Monday	Independence Day. Holiday
Aug. 13	Saturday	Foreign-language examinations for candidates for the Master's degrees
Aug. 15	Monday	Eight-week term ends
		Last day for receiving theses for the Master's degrees and for the professional degrees in Engineering to be conferred in November
Sept. 9	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy and Doctor of Education to be conferred in November
Sept. 22 and 23	Thursday and Friday.	Registration for the fall term of the academic year 1955-56

* For all schools and colleges offering courses in the Summer Term except the Law School and the School of Education.
 The dates of the calendar for the Law School will be announced.
 The calendar for the special sessions of the School of Education is as follows: Pre-session, June 13-July 1; Six-Week Session, July 5-August 12; Post-session, August 15-September 2.
 Registration for each of these sessions is on the first day of classes.

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THE UNIVERSITY OF CHICAGO
PRESS

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† On sabbatical leave spring term 1954-55.

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Harry Ledford, *Athletic Trainer*
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Virginia Randolph Kirkbride, A.M., *Hostess, Sorority Hall, 2129 G Street*



THE UNIVERSITY

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provision of Washington's will, and the stock that he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of the Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress, on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter, members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a bill for the incorporation of "the Columbian Society for literary pur-

poses", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government".

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the college was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Near-by buildings accommodated the School of Medicine and somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all the colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The endowment of the University is \$3,450,000.

In 1930 a new plan of academic organization for the liberal arts work was effected in the establishment of the Junior College and the redefining of graduate work, as indicated below.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences; two years of pre-professional work; and two-year terminal courses. Each of these curricula leads to the degree of Associate in Arts.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, and Master of Science in Engineering. It also directs work leading to the professional degrees in the fields of civil, electrical, and mechanical engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration in the fields of General Administration, and Governmental Fiscal Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies supplements the adult education pro-

gram of the University through its Off-Campus Division, Campus Division, and Division of Community Services.

The Division of University Students makes available courses for mature students, not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education.

LOCATION

The George Washington University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce,

and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member *ex officio*. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

EDUCATIONAL FACILITIES

BUILDINGS

Buildings, grounds, and equipment are valued at approximately \$19,000,000.

The buildings of the Junior College, Columbian College, the Graduate Council, the Law School, the School of Engineering, the School of Pharmacy, the School of Education, the School of Government, the College of General Studies, the Division of University Students, the Division of Special Students, and the University Hospital and Outpatient Department are located between Nineteenth and Twenty-third Streets and between Pennsylvania Avenue and G Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

- Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.
- Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Treasurer, the departments of Chemistry, Electrical Engineering, and Physics; the chemistry, electrical engineering, and physics laboratories; classrooms.
- Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.
- Draper Hall, 2201 G Street. Drafting rooms and classrooms of the School of Engineering.
- Everglades Apartments, 2223 H Street, a residence hall for nurses.
- Faculty Club House, 714 Twenty-first Street.
- Gymnasium, 2010-12 H Street.
- Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean of the School of Government, the departments of Accounting, Business Administration, Economics, History, Political Science, and Statistics; Director of the Navy Controllership Program; classrooms.
- Harlan-Brewer House, 1923 H Street. Offices of law student organizations, lounges, reading rooms.
- Hospital and Outpatient Department, Washington Circle.
- International House, 2110 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.
- Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech.
- Mechanical Engineering Building, 735 Twenty-first Street. Offices of the departments of Electrical and Mechanical Engineering; engineering testing laboratories, general laboratories, drafting rooms, and classrooms.
- James Monroe Hall, 2115 G Street. Offices of the Dean of the Junior College, the Dean of Columbian College, the Dean of the Division of University Stu-

- dents, the Dean of the School of Education, and the Director of the Air Force Manpower Management Training Program; the departments of Education, English (English Literature), Germanic Languages, Journalism, Mathematics, Philosophy, Psychology, Secretarial Studies, and Slavic Languages; classrooms. Office of the President, 2003 G Street. Offices of the President, Dean of Faculties, and Administrative Secretary.
- Placement Office, 2114 G Street.
- School of Medicine, 1335 H Street. Offices of the Staff of the School of Medicine; laboratories; the Medical Library; lecture rooms; classrooms; students' rooms; bookstore.
- Medical Laboratory Building.
- Research Building.
- Sorority Halls:
- 2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.
- 2131 G Street. Apartment of Delta Gamma Sorority.
- 802 Twenty-first Street. Apartment of Phi Sigma Sigma sorority.
- 2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.
- Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project and office of the Coordinator of Scientific Activities.
- Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Offices, library, and lecture halls of the Law School.
- Strong Residence Hall for Women, 620 Twenty-first Street. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University.
- Student Union, 2125 G Street. Offices of student organizations and housing officer, student cafeteria and snack bar, reading room, lounge, game and music rooms, and the "Lost and Found" Office.
- University Book Store, 2120 H Street. Medical Bookstore—Rear 1324 I Street.
- University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The library, rooms of the Board of Trustees and the Graduate Council.
- The Helen L. and Mary E. Warwick Memorial Building, 2310 Washington Circle. Diagnostic and treatment rooms and research laboratories of the George Washington University Cancer Clinic.
- Welling Hall, 814 Twenty-second Street. Residence hall for men. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894.
- Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Office of the Director of Activities for Women; meeting rooms for student and alumni activities.
- Building A, 2026 G Street. Offices of the Department of Romance Languages.
- Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.
- Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Biology, Botany, and Zoology; classrooms.
- Building D, 2013 G Street. Office of the Business Manager; Human Resources Research Office.
- Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies; Director of the Institute of Correctional Administration.

- Building G, 712 Twentieth Street. Offices of the Department of English (Composition section).
- Building H, 714-16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.
- Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography.
- Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.
- Buildings M and N, 716-18 Twenty-first Street. Offices of the Dean of the School of Engineering and the Department of Civil Engineering.
- Building O, 2106 G Street. Office of the Department of Religion.
- Building P, 2108 G Street. Offices of the Student Health Service and the Dean of the Division of Special Students.
- Building Q, 2029 H Street. Office of the Director of Veterans Education.
- Building R, 2027 H Street. Offices of the Director of Activities for Men, the Department of Physical Education for Men, and the Athletic Staff.
- Building S, 2025 H Street. Office of the Assistant to the President.
- Building T, 2110 G Street. Offices of the Director of the Summer Sessions and the Department of Art; International House (see International House).
- Building U, 2018 I Street. Offices of Alumni Relations and Public Relations.
- Building V, 2114 H Street. Laboratories and classrooms of the Department of Physics.
- Building W, 2128 H Street. Offices of the School of Pharmacy; pharmacy laboratories; classrooms.
- Building Y, 802 Twenty-first Street. Offices, classrooms, and laboratories of the Reading Clinic.

LIBRARY FACILITIES

The library collections of The George Washington University are housed in the University Library in Lisner Hall, the general library of the University; and in the departmental libraries of law, in Stockton Hall, and medicine, in the School of Medicine.

These collections contain approximately 270,000 volumes—222,500 in the University Library, 35,000 in the Law Library, and 12,500 in the Medical Library. Approximately 10,000 volumes a year are added to the library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, and public finance, and gifts from many sources have enriched the collections. The Libraries currently receive 1,200 periodicals.

In the modern University Library building, erected in 1939, on the first three floors are the delivery hall, card catalogue, reference and main reading rooms, periodical room, and reserve book rooms; on the fourth floor are ten planned seminar rooms; and on the fifth floor is the Graduate Council reading room for doctoral candidates. To the original 135,000 volume eight-tier stack of modern steel construction has just been added a similar unit of 170,000 volume capacity, with 50 study carrels.

Of the special subject collections in the University Libraries, the most recent acquisition is the internationally known library of the Carnegie

Endowment for International Peace, which was assembled during forty years of its activity in Washington, and was purchased by the University. The collection contains 50,000 bound volumes and 20,000 pamphlets in the fields of international law and relations, history, and economics. Other collections in the Library are the W. Lloyd Wright collection of Washingtoniana, acquired in 1950; the Richard Heinzel Collection of Germanic philology and literature; the Curt Wachsmuth Collection of Greek and Roman literature, archaeology, and history; the Mount Vernon Collection on political history, international law, and the social sciences; a representative collection of Spanish American books, the gift of the governments of Hispanic America; and the Chauncey Mitchell Depew Public Speaking Collection.

Information concerning the use of the Libraries may be obtained at the library service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibitions are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 9:00 P.M.; Saturday, 9:00 A.M. to 1:00 P.M.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given in the required English courses, and by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Inter-library loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the Armed Forces Medical Library, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

ADMISSION

All colleges, schools, and divisions of the University accept men and women, except the Division of Air Science.

Students may enter any college, school, or division of the University except the School of Medicine at the beginning of the fall term, the spring term, or the summer term.

Entrance to the School of Medicine in 1954-55 is permitted only at the opening of the term beginning September 1954.

GENERAL ADMISSION REQUIREMENTS

The following factors are considered in determining the eligibility of an applicant for admission:

1. The adequacy of previous academic work as preparation for the course of study now contemplated—including quantity and quality of work and the standing of the institution in which it was done.
2. The aptitude of the student for the course contemplated.
3. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who for any other reason would not be a desirable student.

APPLICATION FOR ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of \$3 (\$5 for the School of Medicine). A recent photograph, with signature, of the applicant must be attached to the blank.

An applicant for admission to the Reserve Officers' Training Corps must also fill out and return a supplemental Air Force ROTC application form.

Applications should be filed not later than July 1 for the fall term, January 1 for the spring term, and May 1 for the summer term.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it directly to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning must request the registrar of that institution to mail directly to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the regis-

trar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned*, together with an honorable dismissal from the institution last attended.

The Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey is accepted as supplemental evidence of the applicant's educational attainment, and the appropriate report should accompany the application for admission whenever available.

METHODS OF ADMISSION

FROM SECONDARY SCHOOLS

An applicant from a secondary school may seek to qualify for admission by certificate or examination.

By Certificate

A certificate of graduation with a minimum of fifteen "units"* from an accredited secondary school and the recommendation from the principal of the secondary school that the applicant is prepared to undertake college work will be considered subject to the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class.
2. If the school is not listed by the regional accrediting association, but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class.

By College Entrance Board Examinations

An applicant may qualify by passing satisfactorily College Entrance Board examinations as prescribed by the Director of Admissions. These examinations are given at a large number of examination centers throughout the United States, including Washington, D. C., on May 22, August 11, and December 4, 1954; and January 8, March 12, May 21, and August 10, 1955.

Arrangements for the examinations should be made with the College Entrance Examination Board, Post Office Box 592, Princeton, N. J., not less than one month before the date of the examinations.

FROM HIGHER INSTITUTIONS†

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited institution of higher learning. The student must be in good standing as to scholarship and conduct, and must be eligible to return to the pre-

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

† The University reserves the right to refuse advance credit in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

viously attended institution in the term for which he seeks admission to this University.

If the transcript of record from such an institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record directly from the principal of the secondary school. High school work is considered only as fulfilling entrance requirements; it is never credited toward advanced standing.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree at this University, subject to the curriculum requirements and regulations of the school or college to which admission is sought. Work of low pass grade (such as *D* or the equivalent) will not be considered for transfer.

ENTRANCE REQUIREMENTS

THE JUNIOR COLLEGE

An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations selected with the approval of the Director of Admissions is required. (See "Methods of Admission".)

Distribution of Units for All Curricula.—Certification by the principal that the student has satisfied all curriculum requirements of the school will be accepted in lieu of any prescribed distribution of units. Attention is called, however, to the necessity of completing stated prerequisite studies during the secondary school period for admission to certain curricula. It is to be noted that one unit of algebra is prerequisite to courses in chemistry, mathematics, physics, and statistics, and that in addition one unit of plane geometry is prerequisite to courses in mathematics and physics. In the instance of applicants who do not meet the above stated mathematics requirements, algebra and plane geometry may be taken without college credit when offered by the Department of Mathematics. For a statement of the foreign language requirements see page 61.

A desirable secondary school program in preparation for college would include: four years of English, four years of foreign language (preferably one language rather than two), two years of natural or physical science with laboratory instruction (and over and beyond the so-called "General Science"), two or three years of social studies (with concentration on history), one or two years of basic mathematics.

COLUMBIAN COLLEGE (THE SENIOR COLLEGE)

For the Bachelor's Degrees

Two years of Junior College work leading to the degree of Associate in Arts, or the lower-division work in institutions not organized on the

junior-senior-college plan, following a specified curriculum, meet the minimum requirements of Columbian College. In addition, however, scholarship requirements for admission may be set somewhat higher than those for graduation from the Junior College.

Bachelor of Arts.—An Associate in Arts degree based on the *Arts and Letters* curriculum in the Junior College, or the equivalent (see page 62), is required.

Bachelor of Science.—An Associate in Arts degree based on the *Science* curriculum in the Junior College, or the equivalent (see page 63), is required.

For the Master's Degrees

An approved Bachelor's degree from an accredited higher institution is required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but he will be required to take such extra work above the minimum requirements as may be prescribed. An appropriate distribution of courses and a superior quality of work in the major field are essential.

Applications for admission must be approved by the department or division and by the Dean.

Master of Arts.—The student's undergraduate curriculum must have included a program of study substantially equivalent to the Bachelor of Arts major in his chosen field at this University.

Master of Science.—The student's undergraduate curriculum must have included the equivalent of the undergraduate major at this University of the scientific department under which he desires to work.

THE GRADUATE COUNCIL

Doctor of Philosophy.—The student must possess an adequate academic preparation for advanced study in the proposed field, as evidenced by approved Bachelor's and Master's degrees, or the equivalent, together with acceptable personal qualities and capacity for creative work.

THE SCHOOL OF MEDICINE

Doctor of Medicine.—Ninety credit hours of work, exclusive of physical education, in an accredited higher institution are required, as follows:

1. Chemistry, sixteen credit hours as follows: (a) eight credit hours in general inorganic chemistry, of which at least four credit hours are laboratory work (qualitative analysis may be counted as general inorganic chemistry); (b) eight credit hours or a one-year college course of organic chemistry, including laboratory work.
2. Physics, eight credit hours, of which at least two credit hours are laboratory work. It is recommended that this course be preceded by one in trigonometry.

3. Biology, eight credit hours, of which at least four credit hours are laboratory work. This requirement may be satisfied by a course of eight credit hours in either general biology or zoology, or by four credit hours each in zoology and botany but not by botany alone.

4. English composition and literature, six credit hours, the usual introductory college course or the equivalent. The student should develop facility in speaking and writing English.

5. Modern foreign language: a reading knowledge, preferably of French or German.

6. Electives. It is recommended that the remaining credit hours required include: (a) comparative vertebrate anatomy; (b) qualitative and quantitative chemical analysis; (c) social science and psychology.

Advanced Standing

A student who has satisfactorily completed one or two years at any other medical school approved by the American Medical Association, and who has the necessary preliminary educational requirements, may be admitted to advanced standing.

THE LAW SCHOOL

For the Degrees of Bachelor of Laws and Juris Doctor

Bachelor of Laws.—A Bachelor of Arts or equivalent degree awarded upon completion of a four-year course in an approved college or university is required. All pre-legal work must be of satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

Juris Doctor.—A student does not register as a candidate for this degree until his last year in the Law School. For details, see pages 116-17.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws will be granted only for work successfully completed in other law schools which are members of the Association of American Law Schools.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

Advanced standing toward the degree of Juris Doctor will not be granted.

For the Graduate Degrees

Master of Laws.*—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained an average grade on all work done for the Bachelor of Laws degree equivalent to the relative position of a *B* average in the standards of grading at this Law School, except that, in the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative.

Master of Comparative Law and Master of Comparative Law (American Practice).—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycée, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students

A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students

A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to

* Satisfactory completion of one-half the work required for graduation from an accredited college satisfies the pre-legal admission requirement if the applicant served not less than 20 continuous months in the U. S. armed forces during World War II prior to September 1948.

register as degree candidates or as unclassified students should file the regular application for admission form.

THE SCHOOL OF ENGINEERING For the Bachelor's Degrees

Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.—An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

ADVANCED STANDING

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

For the Master's Degree

Master of Science in Engineering.—A Bachelor's degree in engineering from a recognized institution and evidence of capacity for productive study are required. Admission by examination may be permitted in exceptional cases.

THE SCHOOL OF PHARMACY For the Bachelor's Degree

Bachelor of Science in Pharmacy.—An Associate in Arts degree based on the curriculum in Pharmacy in the Junior College (see pages 63-64), or the equivalent is required.

A student who has received a Bachelor's degree from an accredited institution or who has completed work in the general cultural or foundational subjects of the pharmacy curriculum may be admitted to advanced

standing. No more than one year of advanced standing will be granted a student from any institution other than an accredited college of pharmacy.

For the Master's Degree

Master of Science in Pharmacy.—A Bachelor of Science degree from an accredited institution is required. A superior record and professional promise are essential.

THE SCHOOL OF EDUCATION

For the Bachelor's Degrees

Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education.—An Associate in Arts degree based on the *Education, Home Economics, or Physical Education* curriculum in the Junior College (see pages 64-65), or the equivalent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent is required. With the exception of Home Economics, applicants must be in possession of personality traits that give promise of success as a teacher.

For the Master's Degree

Master of Arts in Education.—To be admitted to candidacy for the degree of Master of Arts in Education the applicant must: (1) hold a Bachelor's degree from an accredited institution; (2) have an undergraduate quality-point index of 2.50 or above (C + average); (3) have demonstrated a genuine interest in teaching; (4) be in possession of personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are prerequisite.

For the Doctor's Degree

Doctor of Education.—The degree of Master of Arts in Education, or the equivalent, and at least three years of satisfactory educational experience are required.

THE SCHOOL OF GOVERNMENT

For the Bachelor's Degree

Bachelor of Arts in Government.—An Associate in Arts degree based on the *Foreign Affairs, Accounting, Business Administration, or Statistics* curriculum in the Junior College (see pages 66-67), or the equivalent is required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted at the discretion of the Dean's Council, but will be required to take such extra work above the minimum requirements as may be prescribed.

A student admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in his undergraduate major. An applicant whose scholastic average is below 3.00 in his major, or who lacks prerequisite courses, may be referred to the Division of Special Students to make up the deficiency.

Master of Arts in Government.—The applicant's undergraduate program must have included prerequisite courses, corresponding to an undergraduate major at this University, for the chosen field of graduate study.

Master of Arts in Public Administration with major fields in General Administration and in Governmental Fiscal Administration.—An undergraduate major in a social science field appropriate to the chosen field of advanced work in public administration is required.

Master of Arts in Personnel Administration.—An undergraduate major in a social science or education, with the appropriate courses in psychology, is required.

Master of Business Administration.—An acceptable undergraduate major in Business Administration, or the equivalent, is required. Applicants who are deficient in such course work may be admitted and will be required to make up deficiencies over and above the normal Master of Business Administration program.

For the Doctor's Degree

Doctor of Business Administration.—A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in statistics and accounting to the satisfaction of the Committee on Doctoral Studies are required.

THE COLLEGE OF GENERAL STUDIES

For information concerning the College of General Studies, see pages 183-85.

THE DIVISION OF UNIVERSITY STUDENTS

Students 21 years of age or over who are not interested in working for a degree in this University may be considered for admission to the Division of University Students to take courses for which they have adequate preparation, as evidenced by previous scholastic records.

In special instances, with the permission of the instructor, a person may be considered for admission as an auditor in a class without being

required to take active part in the exercises or to pass examinations, but no credit will be allowed for such attendance.

THE DIVISION OF SPECIAL STUDENTS

This is a non degree-granting division of the University in which the Director of Admissions may authorize the placement of students in the process of making up entrance deficiencies to degree-granting colleges and schools of the University.

Complete credentials must be submitted and evaluated before a tentative or definite plan of make-up may be prepared.

THE DIVISION OF AIR SCIENCE

The applicant must be a regularly enrolled, full-time, male student; a citizen of the United States; between the ages of 14 and 25; physically qualified; of good character; and a candidate for a degree.

CLASSIFICATION OF STUDENTS

Regular Students.—Regular students are those who have met the entrance requirements for candidacy and are registered for degrees.

University Students.—Persons of mature age not seeking degrees, as specified in the rules of the Division of University Students, may be admitted to this Division to pursue courses for which they have had adequate preparation.

Special Students.—Special students are those who are in the process of qualifying for admission to curricula in degree-granting colleges and schools of this University.

Unclassified Students and Continuing Legal Education Students.—For a definition of Unclassified Students and Continuing Legal Education Students in the Law School, see page 120.

Additional information concerning curricula, courses offered, entrance requirements, or admission procedure may be obtained from the Office of the Director of Admissions.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University (See "Admission", pages 12-21.)

A student who has previously matriculated in the University, but who has not been in attendance during the term prior to registration, should file an application for readmission in advance of registration.

Registration is for the term unless otherwise indicated on the registration paper. No registration is accepted for less than a term or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the dean of the college, school, or division in which he is registered in The George Washington University. Allowance of credit for work done concurrently will be at the discretion of the appropriate Committee on Admission and Advanced Standing.

TIME AND PLACE OF REGISTRATION

Registration for all colleges, schools, and divisions except as noted below is conducted in Building C, 2029 G Street NW., during the following periods: *fall term*, September 23 and 24; *spring term*, February 3 and 4.

For the Law School: Stockton Hall, 720 Twentieth Street NW.: *fall term*, September 23 and 24; *spring term*, February 3 and 4.

For the School of Medicine: School of Medicine, 1335 H Street NW., between 9:00 a.m. and 4:00 p.m., September 16 and 17.

For the College of General Studies: at times and places designated in individual course announcements.

REGISTRATION CHANGES AND WITHDRAWALS

For regulations governing changes in registrations and withdrawals, see pages 24, 25-26, 43-44.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted, effective September 1, 1954:

TUITION FEES

For each credit hour* for which the student registers (except work in the Law School, work toward the Master's degree in Engineering, and work taken by a candidate for a Doctor's degree).....	\$15.00
For each credit hour for which the student registers in the Law School	17.00
For the degree of Doctor of Medicine, for two terms†.....	850.00
For the degree of Doctor of Philosophy, Doctor of Education, or Doctor of Business Administration:	
For work§ leading to and including the Council Fellowship or General examination|| .....	450.00
For work leading to and including the final examination||.....	450.00
For the degree of Doctor of Juridical Science:	
For work leading to and including the final examination||.....	450.00
For the degree of Master of Science in Engineering:	
For work leading to and including the Comprehensive Examination	550.00

ADDITIONAL COURSE FEES

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the term and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES

Wherein the degree of Associate in Arts is granted.....	\$10.00
Wherein a degree other than the Associate in Arts degree is granted	20.00

FEE FOR BINDING MASTER'S THESIS..... 5.00

FEE FOR THE PROFESSIONAL THESIS IN THE SCHOOL OF ENGINEERING.... 75.00

An annual fee, one half payable in advance at the time of each registration.

* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

† Registration in the School of Medicine is for a period of two terms. After the student has entered the course of instruction he is obligated for the full tuition for two terms. No part of the tuition will be refunded upon withdrawal or dismissal for any cause.

§ This fee does not cover the cost of tuition for elementary courses (numbered 1 to 100).

|| When a limited schedule is carried which extends the time of either the preparation period or the examination period to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

FEE FOR PRINTING AND FILING SUMMARY OF DOCTORAL DISSERTATION.... \$75.00

SPECIAL FEES

Application fee, charged each applicant for admission (except applicants to the School of Medicine), non-refundable.....	3.00
Application fee, charged each applicant for admission to the School of Medicine, non-refundable.....	5.00
Scholastic-aptitude Test (when required for admission).....	3.00
Late-registration fee, charged each student who fails to register within the designated period.....	5.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration.....	5.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees").....	1.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees.....	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any term of absence from the University or after completion of tuition requirements:	
In the Law School.....	17.00
In all other colleges, schools, and divisions.....	15.00
For special physical examination.....	2.00
Student Bar Association fee, charged each student in the Law School for each term or any part thereof except the summer term.....	2.50
Engineers' Council fee, charged each student in the School of Engineering for each term or any part thereof except the summer term.....	1.50
For each examination to qualify for advanced standing and for each special examination.....	5.00
Laboratory checkout fee, charged each student in chemistry and pharmacy courses who fails to check out of the laboratory by the time set by the instructor.....	2.00
Transcript fee, charged for each transcript of record after the first....	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration, pages 195-96. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each term are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for term charges, except for fees payable in advance, permitting payments as follows:

Fall Term.—One third at the time of registration; one third on November 3; one third on December 3.

Spring Term.—One third at the time of registration; one third on March 3; one third on April 3.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of \$1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of \$5.

A student suspended for failure to meet payments when due may not be reinstated for the term after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal", pages 43 and 44).

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Term.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Term.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of \$5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the term for which a registration charge is incurred and in no case will this payment be credited to another term.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of \$2. A student who drops a course before the end of the term must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS

The following fellowships are available to graduate students. Applications should be submitted for consideration not later than April 1 preceding the period for which the fellowship is to be awarded.

The applicant for a University Teaching Fellowship or a Special Fellowship is expected to be a prospective candidate for the degree of Doctor of Philosophy, and to have the Master of Arts degree, or the equivalent, in the general field of his future doctoral study and research. Forms on which to make application for these fellowships may be obtained from the Chairman of the Graduate Council.

University Teaching Fellowships.—These are assigned for the academic year in the following departments of instruction: Bacteriology, Biochemistry, Botany, Chemistry, Economics, English, History, Physics, Psychology, Romance Languages, and Statistics. Each fellow receives an annual stipend, plus full tuition in the Graduate Council, for whatever schedule of study or research his fellowship duties permit him to carry. The occupant of each of these fellowships renders a designated unit of service to the department of instruction in his major field of doctoral study, usually in classroom or laboratory assignments.

Law School Teaching Fellowships.—A limited number of teaching fellowships are available each year in the Law School to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. The occupant of each of these fellowships follows an approved program of study and research, assists members of the Faculty in the guidance of first year students, and supervises student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Law School not later than March 1 preceding the period for which the fellowship is to be awarded.

Special Fellowships.—Special fellowships are supported by endowment, and are awarded to doctoral students of unusual promise and ability. The stipend is not fixed but varies in amount with the need of the individual receiving the award. In applying for one of these fellowships it is advantageous that the student appear personally for an interview with the Chairman and such other members of the Graduate Council as would be interested in the research investigations proposed. These fellowships include the following:

Isabella Osborn King Research Fellowships.—Two fellowships of the value of \$1,500 each, offered annually in the general field of biology, and intended to foster research for which the libraries and scientific establishments in Washington provide special facilities.

Thomas Bradford Sanders Fellowships.—Established in 1928 by Miss Addie Sanders in memory of her brother, Thomas Bradford Sanders, and offered in various academic fields of study.

SCHOLARSHIPS •

Alpha Zeta Omega Scholarship.—This scholarship in the amount of \$500, was established by Pi Chapter of Alpha Zeta Omega Pharmaceutical Fraternity. It is awarded annually to a member of the graduating class of one of the public high schools of the District of Columbia who intends to enroll in the Junior College Pharmacy Curriculum and to continue in the School of Pharmacy, completing the work leading to the degree of Bachelor of Science in Pharmacy.

Alumni Scholarships.—Five scholarships are available each year in the Junior College, upon the recommendation of regional alumni clubs, to outstanding male graduates of accredited high schools. The scholarships cover tuition costs for four terms (beginning with the fall term) of full-time work but do not include special fees such as laboratory charges, room, board, or other expenses. To retain the scholarship, the student must maintain a *B* average. Additional information may be obtained from the Executive Secretary of the General Alumni Association.

American Foundation for Pharmaceutical Education Scholarship.—A scholarship fund, in the amount of \$400, established by the American Foundation for Pharmaceutical Education, is available annually to junior and senior students of the School of Pharmacy who are in the upper quarter of their class or who are maintaining average grades of not less than *B*. The scholarship funds are awarded on the recommendation of the Committee on Scholarship of the School of Pharmacy.

American Society of Women Accountants.—This scholarship, in the amount of \$100, established in 1953 by the District of Columbia Chapter of the American Society of Women Accountants, is available to a

* Scholarships are awarded for two terms unless otherwise specified and are credited in equal parts for each term. Each holder must carry a full schedule of academic work (fifteen credit hours or in the professional schools the full prescribed schedule) during the period for which the scholarship is awarded. Applicants (except in the case of the Alpha Zeta Omega Scholarship, the Alumni Scholarships, the Daughters of the American Revolution Scholarship, D. C. Pharmaceutical Association Scholarship, School of Engineering Scholarships, the High School Scholarships, the Kappa Alpha Theta Scholarship, the Law School Scholarships, the Eugene and Agnes Meyer Scholarships, the National League of Masonry Clubs Scholarship, the John O. Rankin Scholarship, and the Student Activities Scholarships) must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information may be obtained from the Chairman of the Committee on Scholarships.

junior, senior, or postgraduate woman majoring in accounting whose academic record is good and who needs aid in continuing her education.

Byron Andrews Scholarship.—This scholarship, in the amount of \$200, established in 1920 by Mrs. Belle Fisk Andrews in memory of her husband, Byron Andrews, is available "for ambitious and needy students, who desire to pursue courses in English, Latin, journalism, history, literature, or political science".

Anna Bartsch Scholarship.—This scholarship, in the amount of \$500, established in 1946 by Dr. Anna Bartsch-Dunne, as a memorial to her mother, Anna Bartsch, is available to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession". The award is made upon the recommendation of the Faculty of the School of Medicine.

Emma K. Carr Scholarships.—Six scholarships in the amount of \$400 each and eight of \$100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship.—This scholarship, in the amount of \$400, established in 1896 by Mrs. Maria M. Carter in memory of her husband, Henry Harding Carter, is available to a deserving student who is preparing for the civil-engineering profession.

Maria M. Carter Scholarship.—This scholarship, in the amount of \$100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Daughters of the American Revolution Scholarship.—This scholarship, in the amount of \$350, established in 1952 by the District of Columbia Daughters of the American Revolution, is available to descendants, preferably female, of patriots of the American Revolution.

Isaac Davis Scholarship.—This scholarship, in the amount of \$80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

District of Columbia Pharmaceutical Association Scholarship.—This scholarship, in the amount of \$500, was established in 1954. It is awarded annually to a member of the graduating class of one of the public or parochial high schools of the District of Columbia and near-by Maryland and Virginia who intends to enroll in the Junior College Pharmacy Curriculum and to continue in the School of Pharmacy, completing the work leading to the degree of Bachelor of Science in Pharmacy.

Charles Worthington Dorsey Memorial Scholarship.—This scholarship, established in 1947 as a memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82, is awarded upon the recommendation of the Faculty of the Law School to a needy and promising

graduate of Columbian College or other division of the University, with a Bachelor of Arts or other equivalent degree, who has maintained an average of *B* as an undergraduate student and who desires to pursue the study of law as a full-time student. The scholarship covers tuition for the course leading to the first degree from the Law School, Bachelor of Laws or Juris Doctor, provided that the holder maintains an average of *B*. The right is reserved to suspend the benefits of the scholarship for cause at any time. This scholarship is awarded ordinarily once every three years.

School of Engineering Scholarships.—Four scholarships, established in 1952, are available each year in the School of Engineering to graduates of accredited secondary schools. Each scholarship provides full tuition for one year. The holders of these scholarships must carry a full program in the School of Engineering.

Robert Farnham Scholarship.—This scholarship, in the amount of \$75, given to the University in 1871 by Mrs. Robert Farnham, is available to a student in Columbian College.

Anna Spicker Hampel Scholarship.—This scholarship, in the amount of \$40, established in 1949 by Mrs. Evelyn Hampel Young, is available for scholarship aid to young married women students in the School of Education or Columbian College.

Elma Lewis Harvey Scholarship.—This scholarship of \$100 was founded in 1921 by Mrs. Emma Elizabeth Harvey in memory of her daughter, and is awarded every four years, or as often as vacant, to a young woman in Columbian College of the Protestant faith and the Caucasian race who shall be selected for scholarship and moral qualifications.

Hazleton Scholarship.—This scholarship, in the amount of \$300, established in 1950 by the bequest of Lillie S. Hazleton, is awarded annually "for the use and assistance of needy and worthy students".

High School Scholarships.—The Board of Trustees of the University offers the following scholarships for study in the liberal arts to graduates of public high schools of the District of Columbia and near-by Maryland and Virginia. District of Columbia: Anacostia, Coolidge, Eastern, McKinley, Roosevelt, Western, and Woodrow Wilson high schools—two scholarships each (The Amos Kendall Scholarship, established by the late Honorable Amos Kendall, is one of the two assigned to Western High School.); Montgomery County, Maryland—four scholarships; Prince Georges County, Maryland—four scholarships; Alexandria County, Virginia—two scholarships; Arlington County, Virginia—four scholarships. Scholarships are divided equally between men and women.

Each scholarship is awarded annually to a member of the graduating class who plans to enter the Junior College and continue in Columbian College, completing the work leading to a Bachelor's degree. A prin-

principal and an alternate may be recommended. The principal or, if the principal declines, the alternate must register the following September.

The holders of these scholarships are exempt from tuition fees, but are charged laboratory, graduation, and other fees. The scholarships are valid for four academic years of undergraduate study.

To retain any high school scholarship, a student must carry a full program of study in the liberal arts (a full program being defined as at least fifteen hours of work each term). An average of *B* and a high standard of deportment must be maintained. Scholarships are reassigned annually. If the holder fails to continue its use during the academic year, the scholarship will not be reassigned.

High School Discussion Conference Scholarships.—Three scholarships are available each year in the Junior College to high school seniors who participate in the George Washington University High School Discussion Program. These scholarships cover tuition for one year, but do not include laboratory fees or other special fees. For information concerning application, consult the Department of Speech.

Kappa Alpha Theta Scholarship.—This scholarship, in the amount of \$500, established by the Washington alumnae of Kappa Alpha Theta, is available for the training of a clinician in speech correction.

Kappa Psi Scholarship.—This scholarship, in the amount of \$75, was established in 1952 by Gamma Tau Chapter of Kappa Psi Pharmaceutical Fraternity. It is awarded annually to a student in the School of Pharmacy who is in need of financial aid.

Law School Scholarships.—Seven scholarships are available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-years' tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average. Application must be made before February 1 to the Dean of the Law School.

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund, in the amount of \$2,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

A. Morehouse Scholarship.—This scholarship was established by Mr. A. Morehouse in 1861. It carries an annual stipend of \$200, which is available for an undergraduate "intending to enter the Christian ministry".

The National League of Masonic Clubs Scholarship.—This four-year scholarship, in the amount of \$450 annually to be applied toward pay-

ment of tuition costs only, is offered by the National League of Masonic Clubs to the son or daughter of a Master Mason who is a member of a Masonic Club affiliated with the National League of Masonic Clubs. To continue to hold the scholarship, the student must maintain a satisfactory academic record.

Newspaper Scholarships.—One scholarship is available each year to a candidate recommended by each of the following newspapers: *The Washington Daily News*, *The Washington Post and Times Herald*, and *The Evening Star*. The holder of the scholarship must be an employee of the newspaper. These scholarships cover tuition for four years, but do not include laboratory fees, graduation fees, or other special fees.

Panhellenic Association of Washington, D. C., Scholarship.—A scholarship, in the amount of \$200 to be applied to tuition fees, has been established by the Panhellenic Association of Washington, D. C. This scholarship is available annually to a woman student in her sophomore or junior year, who is a member of a National Panhellenic Conference sorority, has done the most to promote good social relations among the sororities on the campus, is an outstanding leader in student affairs sponsored by the University, and has a 2.5 (C+) or better average.

Paul Pearson Scholarship.—This scholarship, in the amount of \$200, established in 1940 by bequest of Paul Pearson and "to be known as the Dr. Paul Pearson award", is available to a student in the School of Pharmacy, upon the recommendation of the Faculty of that School.

John O. Rankin Scholarship.—This scholarship, established in October 1951 in recognition of Mr. Rankin's bequest to the University, is to be awarded to a resident of Pemiscot County, Missouri, upon the recommendation of the Caruthersville Rotary Club and the Hayti Lions Club in this County. The scholarship covers tuition costs for the four-year curriculum in Foreign Affairs, but it does not include laboratory fees, graduation fees, or other special fees. To retain the scholarship, the recipient must carry a full program and maintain an average of B. The scholarship is awarded every four years or as often as vacant. Further information may be obtained from the Office of the President of the University.

Lula M. Shepard Scholarships.—Two scholarships, in the amount of \$450 and \$300, respectively, established in 1946 by bequest of Lula M. Shepard, are available to "worthy Protestant students desiring to enter the Foreign Service Department of the School of Government".

David Spencer Scholarship.—This scholarship of \$150, established in 1918 by Miss Louisa J. Spencer, is available under certain restrictions.

Mary Lowell Stone Scholarship.—This memorial scholarship, in the amount of \$200, established in 1893, is available to a woman student of science in Columbian College.

Student Activities Scholarships.—The University has established a

limited number of Activities Scholarships for men, which are awarded to approved applicants by the Faculty Committee on Scholarships upon the basis of (1) need, (2) good character, (3) demonstrated aptitude for leadership, and (4) scholarship.

Such scholarships are granted for one academic year. They may be continued, however, upon the basis on which they were granted. Recipients of Activities Scholarships must maintain the required scholastic average of the school or division in which they are registered.

The time for filing applications for Activities Scholarships and the terms of such scholarships may be ascertained by inquiry at the office of the Chairman of the Committee on Scholarships.

Charles Clinton Swisher Scholarship.—This scholarship, in the amount of \$400, established in 1941 by Professor Charles Clinton Swisher, is available to a student of medieval history.

William Walker Scholarship.—This scholarship, established in 1824 by William Walker, Esq., carries an annual stipend of \$300, which is available for an undergraduate intending to enter the Christian ministry.

John Withington Scholarship.—This scholarship of \$150 was established in 1830 by the New York Baptist Theological Seminary.

Ellen Woodhull Scholarship.—This scholarship of \$50, established by Ellen M. E. Woodhull, is available to a student in Columbian College.

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of \$300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

THE COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded by the Scholarship Committee of the Columbian Women. Applications for these scholarships should be addressed to the Chairman of the Scholarship Committee, the Columbian Women, The George Washington University, Washington 6, D.C., not later than May 15 preceding the academic year for which the scholarship is to be awarded, or, in the case of award for the spring term, not later than January 1.

Nellie Maynard Knapp Scholarship Fund.—The income from this fund of \$5,000, established in 1915 in memory of a former president, Mrs. Martin A. Knapp, is available for scholarships for women.

Founders of Columbian Women Scholarship Fund.—The income from this fund of \$5,000, established in 1920, is available for scholarships.

Lillian Young Herron Scholarship Fund.—The income from this fund of \$5,000, established in 1925 and named in 1930 in memory of a former president, is available for scholarships.

Elizabeth V. Brown Scholarship Fund.—This fund of \$1,200 was established in 1925 by the College Women's Club of Washington, D.C.,

in memory of the late Elizabeth V. Brown. The income is available for a scholarship for a woman student in the School of Education.

College Women's Scholarship Fund.—The income from this fund of \$500, established in 1926 by the College Women's Club of Washington, D.C., is available for scholarship aid.

Lewes D. and Myrtie H. Wilson Memorial Scholarship Fund.—This fund of \$1,000 was established by Miss Elizabeth Wilson in 1926 as a memorial to her parents, Lewes D. and Myrtie H. Wilson. The income is available for a scholarship in the School of Medicine.

Grace Ross Chamberlin Scholarship Fund.—The income from this fund of \$2,300, established in 1932 in honor of a former president, is available for scholarship aid.

PRIZES

Alpha Chi Sigma Prizes.—Alpha Pi Chapter of Alpha Chi Sigma Fraternity offers annually the following prizes:

A "Handbook on Chemistry and Physics" is awarded to each of the three students who carry at least eighteen credit hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry will be inscribed on a bronze plaque. The winner must have had at least sixteen hours of chemistry including the final term at The George Washington University.

Alpha Delta Pi Prize.—Alpha Pi Chapter of Alpha Delta Pi Fraternity offers an annual prize of \$10 to the woman member of the junior class with the most outstanding record in scholarship, extra-curricular activities, and service to the University.

Alpha Kappa Psi Prize.—Beta Mu Chapter of Alpha Kappa Psi Fraternity awards annually a key to the male student who has completed ninety credit hours at The George Washington University and has attained the highest average grade in economics, business administration, public accounting, public finance, and foreign commerce.

Alpha Zeta Omega Prize.—The Ladies' Auxiliary, Pi Chapter, of the Alpha Zeta Omega Pharmaceutical Fraternity offers annually a copy of *The United States Dispensatory* to the freshman student in pharmacy, who has completed at least fifteen hours in the University and who has attained the highest average in his courses.

American Institute of Chemists Prize.—The District of Columbia Chapter of the American Institute of Chemists offers an annual prize of a medal and junior membership in the American Institute of Chemists to that graduating student, majoring in chemistry, who excels in scholarship and in the personal qualities of integrity and leadership.

Byrne Thurtell Burns Memorial Prize.—This prize of \$75 is awarded

to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Martin L. Cannon Memorial Prize.—Pi Chapter of the Alpha Zeta Omega Pharmaceutical Fraternity offers annually a copy of *The United States Dispensatory*, in memory of Dr. Martin L. Cannon, to the student in pharmacy receiving his Associate in Arts degree, who throughout his course has obtained the highest grades and at the same time contributed most to the student activities in the School of Pharmacy.

Chi Omega Prize.—Phi Alpha Chapter of Chi Omega Fraternity offers annually a prize of \$25 to be awarded to the woman student in the graduating class with the highest record in the following social sciences: economics, sociology, political science, and history; combined with general excellence.

John Henry Cowles Prizes.—These prizes, founded in 1943 by John H. Cowles, Grand Commander of the Supreme Council of the Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America, are awarded annually to the best two scholars in the senior class of the School of Government. The prizes are as follows: first prize, \$100; second prize, \$50.

DeWitt Clinton Croissant Prize.—This prize of \$50, established by the late Professor DeWitt Clinton Croissant, is awarded annually to the undergraduate student who as a member of one of the University courses in drama or as a participant in University dramatics submits to the English Department the best essay on drama or the theatre.

E. K. Cutter Prize.—The E. K. Cutter Prize in English was established by the late Marion Kendall Cutter "for excellence in the study of English." An annual prize of \$60 is awarded to the member of the graduating class whose record in English, combined with general excellence, shows most marked aptitude for and attainment in English studies.

Daughters of the American Revolution Prize.—This prize, established by the Daughters of the American Revolution of the District of Columbia, consists of \$15, which is awarded annually to the student who, having maintained a record of distinction in American history, submits the best essay upon a topic in the period of the American Revolution.

Isaac Davis Prizes.—These prizes, established by the Honorable Isaac Davis, of Massachusetts, in 1847, are awarded annually to such members of the senior class as shall have made the greatest progress in public speaking during their connection with the University. The prizes are as follows: first prize, \$25; second prize, \$20; third prize, \$15.

The award of these three prizes is determined by a public-speaking contest in which the participants deliver original orations. Only mem-

bers of the senior class who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

Delta Zeta Prize.—Delta Zeta Sorority offers annually a prize of \$10 to be awarded to the student maintaining the highest average in Zoology 1-2.

Ellsworth Prize.—The Ellsworth Prize of \$25, established by the late Mr. Fritz von Briesen, is awarded to the student doing the best work in the subject of Patent Law Practice.

Elton Prize.—The Elton Prize of \$30, established by the Reverend Romeo Elton, of Exeter, England, is awarded annually to the senior student having the highest average in the Greek language and literature.

Jesse Frederick Essary Prize in Journalism.—This memorial prize of \$150, established in 1948 by the late Helen Essary Murphy, is awarded annually to a student who has given promise of sound citizenship and ability in "forthright reporting" in student publication and/or under the jurisdiction of the Department of Journalism. The selection of the recipient will be made by a committee composed of the President of the University and two members of the Faculty.

Joshua Evans III Prize in the Political and Social Sciences.—This memorial prize of \$60, "established by friends because of an outstanding life", is awarded annually to that man in the graduating class of The George Washington University "who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows". The selection of the recipient will be made by the President of the University and a committee from the Faculty of the Division of the Social Sciences.

Willie E. Fitch Prize.—The Willie E. Fitch Prize of \$75, established in 1883 by James E. Fitch, in memory of his son, is awarded annually to a senior student for the best examination in chemistry.

Alice Douglas Goddard Prize.—This prize of \$75 was established in 1941 by Frederick Joseph Goddard of Georgetown, D.C., in memory of Alice Douglas Goddard, and is awarded annually to the upper division student making the highest average in American literature.

Edward Carrington Goddard Prize.—This prize of \$75 was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of Edward Carrington Goddard, class of '81, and is awarded to the junior or senior student making the highest average in the French language and literature.

James Douglas Goddard Prize.—This prize of \$75 was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of James Douglas Goddard, class of '01, and is awarded to the senior student making the highest average in pharmacy.

Morgan Richardson Goddard Prize.—This prize of \$75, was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of Morgan Richardson Goddard, and is awarded to the junior or senior student making the highest average in the following fields: economics, business administration, foreign commerce, and public accounting.

Gardiner G. Hubbard Memorial Prize in United States History.—This prize of \$60 was established by Mrs. Gertrude M. Hubbard in memory of her husband, the late Gardiner G. Hubbard, and is awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

Kappa Kappa Gamma Prize.—Kappa Kappa Gamma Sorority offers annually a prize of \$10 to the full-time freshman who achieves the best record in Botany 1 and 2.

John Bell Lerner Prize.—This prize, established by the bequest of John Bell Lerner, consists of a medal which is awarded annually to that member of the graduating class in the Law School who attains the highest average grade in the entire course for the degree of Bachelor of Laws.

Martin Mahler Prize in Materials Testing.—This prize established in 1953 by Martin Mahler consists of a one year membership in the American Society for Testing Materials and is awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Mortar Board Prize.—This prize, consisting of a silver cup, is awarded annually to the woman student in the sophomore class having a scholarship average of B or higher and the most outstanding record in activities.

Omicron Delta Kappa Prize.—Alpha Delta Circle of Omicron Delta Kappa Fraternity offers annually a plaque to be awarded to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities".

John Ordronaux Prizes.—These prizes were established in 1909 by the bequest of John Ordronaux.

The amount of \$150 is awarded to the member of the graduating class in the School of Medicine who has the highest scholastic standing.

The amount of \$75 is awarded annually to the student in the Law School who has attained the highest average grade in the first year, full-time course; and \$75 to the student who has attained the highest average grade in the second-year, full-time course.

Phi Eta Sigma Prize.—The George Washington University Chapter of Phi Eta Sigma offers annually to the male student attaining the

highest scholastic average in his first full term of work, a choice book selected from the field of the recipient's major interest. The winner's name will be engraved on a plaque in the Office of the Dean of the Junior College.

Phi Sigma Kappa Prize.—Phi Sigma Kappa Fraternity offers annually an engraved silver cup to the winner of an oratorical contest, open to all freshmen.

Pi Beta Phi Prize.—A prize of \$20 is awarded annually by the District of Columbia Alpha Chapter of Pi Beta Phi Fraternity to that woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Psi Chi Prizes.—The George Washington University Chapter of Psi Chi, national honorary society in psychology, offers annually two awards in the field of psychology: the first, \$25 to the best undergraduate student in Experimental Psychology; the second, \$25 to the graduate student submitting the best Master's thesis in Psychology.

Ruggles Prize.—The Ruggles Prize of \$35, established by Professor William Ruggles in 1859, is awarded annually to a candidate for a baccalaureate degree for excellence in mathematics.

Sigma Kappa Prize.—Zeta Chapter of Sigma Kappa Sorority offers an annual prize of \$10 to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—Xi Chapter of Sigma Tau Fraternity offers annually a medal to be awarded to that member of the freshman class in the School of Engineering who maintains the highest scholastic standing in the work of the entire year.

Society of Colonial Wars in the District of Columbia Prize.—This award, in the form of a gold medal, established in 1953 by the Society of Colonial Wars in the District of Columbia, is to be awarded to a candidate for a graduate degree who, in the judgment of the Faculty of the Department of History, submits a thesis or dissertation demonstrating excellence in historical research in American Colonial history. The University reserves the right to withhold the award if no thesis or dissertation attaining the required degree of excellence is submitted.

Staughton Prize.—The Staughton Prize of \$30, established by the Reverend Romeo Elton, is awarded annually to the senior student making the best record in the Latin language and literature.

James MacBride Sterrett, Jr., Prize.—This prize, established in 1911 by Professor James MacBride Sterrett in memory of his son, consists of books awarded annually to that student who obtains the highest average in Physics 6, 7, and 8.

Charles Clinton Swisher Historical Club Prize.—This prize of \$100, established in 1936 by the Charles Clinton Swisher Historical Club and

augmented in 1941 by the bequest of Professor Charles Clinton Swisher, is awarded annually to the student who submits the best essay covering some phase of medieval history.

Theta Tau Activities Plaque.—Gamma Beta Chapter of Theta Tau Fraternity offers annually a plaque to be awarded to that member of the senior class who has the most outstanding record in activities in the School of Engineering during the entire period of his attendance.

Thomas F. Walsh Prize.—This prize of \$150, established in 1901 by Thomas F. Walsh, is awarded annually to that student who submits the best essay in Irish history.

Alexander Wilbourn Weddell Prize.—This prize of \$350, established in 1923, by Mrs. Virginia Chase Weddell, is awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world". The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

MILITARY AWARDS

Air Force Association Silver ROTC Medal.—This medal, offered by the Air Force Association, is awarded annually to the Air Force ROTC Cadet of the senior class who, after completion of summer camp, is judged to be the outstanding cadet among those physically qualified for flying training who have indicated their intention to apply for such training upon graduation.

Reserve Officers' Association Gold ROTC Medal.—This gold medal, offered by the Reserve Officers' Association of the District of Columbia, is awarded annually to the Air Force ROTC Cadet of the junior class with the highest grades in the leadership and academic phases of the Air Force ROTC course for the current year.

Reserve Officers' Association Silver ROTC Medal.—This silver medal, offered by the Reserve Officers' Association of the District of Columbia, is awarded annually to the Air Force ROTC Cadet of the sophomore class with the highest grades in the leadership and academic phases of the Air Force ROTC course for the current year.

Reserve Officers' Association Bronze ROTC Medal.—This bronze medal, offered by the Reserve Officers' Association of the District of Columbia, is awarded annually to the Air Force ROTC Cadet of the freshman class with the highest grades in the leadership and academic phases of the Air Force ROTC course for the current year.

Reserve Officers' Association Junior Memberships.—Five junior memberships, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to the five Air Force ROTC Cadets of

the junior class who obtain the highest grades for the first term in the academic phase of the Air Force ROTC course, Air Science III (101).

Pershing Rifles Achievement Medals.—These medals offered in gold, silver, and bronze are awarded periodically by the National Headquarters of the Pershing Rifles to those active Pershing Riflemen in the Advanced Air Force ROTC course who are judged by their cadet officers, faculty administration, and the Professor of Air Science to be outstanding examples of the ideals of the Pershing Rifles.

The Armed Forces Chemical Association Annual Award.—This award consisting of a scroll and a medal is offered by the Armed Forces Chemical Association annually to selected Air Force ROTC cadets majoring in chemistry or chemical engineering in their junior year. Nominations are made by the Director of Air Science and final selection is made by a board of three senior Air Force Officers.

Society of American Military Engineers Gold Medal.—This medal with Key Replica, offered by the Society of American Engineers, is awarded annually to selected Air Force ROTC Cadets in the next-to-last year of their engineering course and in the last year of such course. Nominations are made jointly by the Director of Air Science and the Dean of engineering, and final selection is made by a board of three senior Air Force officers.

Convair Trophy.—This trophy, a replica of one of the nation's most modern aircraft, offered by Consolidated Vultee Aircraft Corporation is awarded annually to the Air Force ROTC Cadet attaining the highest cumulative grade in Air Science III and IV among the cadets applying for flying training.

FINANCIAL AID

INTERNSHIP

In memory of her mother, Anna Bartsch, Dr. Anna Bartsch-Dunne established in 1946 a fund which provides \$15 a month to aid in the support of an internship in the University Hospital.

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund of \$10,000.

Harris Loan Fund.—This fund of \$400, established by George W. Harris, is available for loan to an orthoptic technician student.

Home Economics Loan Fund.—This fund of \$382.35, contributed by

the D. C. Home Economics Association, is available for loans to senior girls majoring in Home Economics.

Kellogg Medical School Loan Fund.—The W. K. Kellogg Foundation in Battle Creek, Michigan, has established a fund of \$18,363.92 for loans to students in the School of Medicine.

Law Association Loan Fund.—The George Washington Law Association has established a loan fund in the amount of \$822.42 for loans to students in the Law School.

School of Medicine Loan Fund.—This fund of \$1,140.78, contributed by medical students, is available for loans to students in the School of Medicine.

Pfizer Medical School Loan Fund.—The Chas. Pfizer & Co., Inc., has established a fund of \$1,000 for loans to students in the School of Medicine.

Benjamin Schoenfeld Memorial Pharmacy Loan Fund.—This fund, established by the family and friends of Benjamin Schoenfeld, in the amount of \$1,067, is available for loans to students studying pharmacy.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

Henry Strong-William A. Maury Loan Fund.—This fund, also allocated from the funds of the Henry Strong Educational Foundation, is to be loaned to students under the age of twenty-five years in the George Washington University Law School.

Sutherland Medical School Loan Fund.—This fund, in the amount of \$1,360 and established by Mrs. Rose L. Sutherland, is available for loans to students in the School of Medicine.

REGULATIONS

A student enrolled in the University is required to conform to the University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one term or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

For further regulations regarding attendance, consult the announcements of the several colleges and schools.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the college, school, or division in which he is registered may be dismissed from the University.

GRADES

Grades are not given out by instructors but are mailed to the student through the Office of the Registrar at the close of each term. Upon request, a copy of the student's grades will be forwarded to his parent or guardian.

The following grading system is used: excellent *A*; good, *B*; average, *C*; passing, *D*; failing, *F*. Whenever a grade has not been assigned, the symbol *Inc.* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *Inc.* is a sign temporarily to indicate that all the required work of the course has not been completed and a satisfactory explanation has been given to the instructor. An "incomplete" can

not be made up after the lapse of one calendar year except by permission of the Faculty. Courses from which a student has withdrawn by proper authorization will be indicated by the symbol *W*. No student may repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

For graduate work, grades are indicated as "excellent", "satisfactory", "unsatisfactory", or "incomplete".

For the grading systems of the Law School and the School of Medicine, see the explanations in the announcements of those schools.

QUALITY-POINT INDEX

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each credit hour for which the student has registered.

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of credit hours for which the student has registered, both based on the complete collegiate record. Courses marked *W* or *Inc.*, are not considered in determining the index, except that courses marked *Inc.* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. If an "incomplete" is not superseded by a proper grade within the allotted time, it is computed as zero quality points. Grades in courses taken at another institution are not considered in computing the quality-point index.

EXAMINATIONS

Examinations are scheduled in all courses at the end of each term or at the completion of the course.

A student guilty of dishonesty in examinations is subject to the regulations of the faculty under which he is registered.

For further regulations regarding examinations, consult the announcements of the several colleges, schools, and divisions.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the dean of the college, school, or division in which the student is registered. Permission to withdraw from the University will not be granted a student who has not a clear financial record. (See "Fees and Financial Regulations", pages 23-26.)

Withdrawal between October 31 and the end of the fall term and between February 28 and the end of the spring term is permitted only in exceptional cases.

All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course (2 years) or the advanced course (2 years) of the Air Force ROTC without the approval of the President of the University.

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School, or Division.—A student may not change or drop courses (see "Withdrawals", above) or change his status to that of auditor except with the approval of the dean of the college, school, or division in which he is registered, upon presentation of adequate reasons for such changes.

Change from one section to another of the same course may be made with the approval of the dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the dean. All requirements specified in the course of study to which the change is made must be satisfied before graduation.

Transfers within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the Junior College to Columbian College or the School of Government in a regular four-year program, application for transfer must be made to the Director of Admissions on the proper form provided by his office.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various schools and colleges have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations regarding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements on pages 46-47 and to note that in all undergraduate divisions 30 credit hours, including at least 12 credit hours in the major field, must be completed in residence in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the several colleges, schools, and divisions.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class. An auditor is not required to take active part in the exercises or to pass examinations, but no academic credit will be allowed.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be forwarded on request to other institutions. Unofficial copies of records will be issued to the student on request. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Students in the Junior College and freshmen* and sophomores* in the School of Engineering are required to take Physical Education 1-2 and 11-12 unless they are registered for less than 9 credit hours or unless regular employment during the day makes it necessary to take all classes during the evening hours.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the dean of the college or school in which the student is registered.

A student entering the University with advanced standing is not exempt from the physical education requirements unless he has satisfactorily met the requirements elsewhere. Courses in military training are not accepted in satisfaction of these requirements.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

* Freshmen in the School of Engineering enrolled in the Air Force ROTC substitute Air Science 1-2 for Physical Education 1-2; sophomores substitute Air Science 51-52 for Physical Education 11-12.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last term of the senior or final year.

Scholarship.—In all undergraduate divisions of the University the scholarship requirement for graduation is a quality-point index of at least 2.00.

The graduate student must meet the scholarship requirements for the particular degree for which he is registered.

Curriculum.—Minimum curriculum requirements for each degree are stated under the college or school offering work in preparation for the degree. (For Air Force ROTC graduation requirements see the Department of Air Science.)

Residence.—Unless otherwise specified, in all undergraduate divisions of the University, a minimum of thirty credit hours, including at least twelve credit hours in the major field, must be completed in residence in the school or college from which the degree is sought. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the dean of the college or school concerned to pursue work elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

With the permission of the dean of the college, school, or division concerned, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each term he is absent. For the purpose of this regulation, the summer sessions will not be considered a term.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis or Dissertation.—A thesis or dissertation submitted in partial satisfaction of requirements for the Master's degrees, the professional degrees in engineering, the degree of Doctor of Education, the degree of Doctor of Juridical Science, the degree of Doctor of Business Administration, or the degree of Doctor of Philosophy must be presented in its

final form to the dean of the college or school concerned not later than the date specified in the University calendar. Three copies of each thesis or dissertation are required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the styling of all theses and dissertations should be obtained from the appropriate dean.

Accepted theses or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in the thesis or dissertation must be secured from the appropriate dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the dean of his college or school.

HONORS

With distinction.—In all undergraduate divisions of the University the degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution except that taken during the term immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

In the School of Medicine and the Law School, degrees may be conferred "with distinction", at the discretion of the Faculty, on those students who attain an average of *A* on all work taken for the degrees.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution except that taken during the term immediately preceding the granting of the degree.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree prior to the beginning of the term immediately preceding the granting of the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Student" if he (1) has completed Air

Science III with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic standing among the upper third of all students in the institution pursuing the same academic major and scheduled to graduate the same school year, or an accumulative academic average of "B" or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extra-curricular activities and while in attendance at Air Force ROTC summer camp. Distinguished Air Force ROTC Students are authorized to wear a "Distinguished" badge centered above the right breast pocket of the uniform.

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a Distinguished AFROTC Student and maintained the standards required of a Distinguished AFROTC Student during the period between designation and graduation; (2) completed the advanced Air Force ROTC course; (3) completed the requirements for a Bachelor's degree. Distinguished Graduates will be presented with a certificate signed by the Commandant, Air Force ROTC, and they will be given special consideration when they enter active military service and become eligible to apply for a Regular Air Force Commission.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

Library books, with the exception of those in the Law and Medical collections, may be drawn for home use for a period of two weeks. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books and periodicals for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

THE COLLEGES, SCHOOLS, AND DIVISIONS

THE JUNIOR COLLEGE

THE FACULTY AND STAFF OF INSTRUCTION •

George Martin Koehl, A.M., *Acting Dean of the Junior College*
 William Lewis Turner, Ph.D., *Assistant Dean of the Junior College*
 Carr Bartleson Lavell, A.M., *Assistant Dean in the Junior College*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
 Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
 Norris Ingersoll Crandall, M.Arch., *Professor of Art*
 Walter Lynn Cheney, Ph.D., *Professor of Physics*
 ‡ James Henry Taylor, Ph.D., *Professor of Mathematics*
 Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
 Warren Reed West, Ph.D., *Professor of Political Science*
 Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*
 Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
 Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
 Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
 Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
 Florence Marie Mears, Ph.D., *Professor of Mathematics*
 Wood Gray, Ph.D., *Professor of American History*
 Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
 Ira Bowers Hansen, Ph.D., *Professor of Zoology*
 Paul William Bowman, Ph.D., *Professor of Biology*
 Lawson Edwin Yocum, Ph.D., *Professor of Botany*
 ‡ Arthur Edward Burns, Ph.D., *Professor of Economics*
 John Withrow Brewer, Ph.D., *Professor of International Law*
 Frances Kirkpatrick, A.M., *Professor of Home Economics*
 Louis Clark Keating, Ph.D., *Professor of Romance Languages*
 William Henry Myers, A.M., *Professor of Physical Education for Men*
 Harold Loran Geisert, Ph.D., *Professor of Sociology*
 Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
 Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*

• The President of the University, the Dean of Faculties of the University, the Dean and Assistant Deans of the College, the Registrar of the University, the Director of Admissions of the University, Professors, Assistant Professors, Associate Professors, Assistant Professors, and Lecturers constitute the Faculty.
 ‡ Of sabbatical leave upon term 1954-55.

Ernest Sewall Shepard, A.M., *Professor of English Literature*
 Charles Watson Bliven, M.S., *Professor of Pharmacy*
 Alan Thomas Deibert, A.M., *Professor of Romance Languages*
 Donald Stevenson Watson, Ph.D., *Professor of Economics*
 *Myron Law Koenig, Ph.D., *Professor of American History*
 Calvin Darlington Linton, Ph.D., *Professor of English Literature*
 Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy*
 Elbridge Colby, Ph.D., *Professor of Journalism*
 Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art*
 Helen Bennett Lawrence, A.M., *Professor of Physical Education for*

Women

Charles William Cole, Ph.D., *Professor of American Literature*
 George Martin Koehl, A.M., *Professor of Physics*
 Lubin Poe Leggette, A.M., *Depew Professor of Speech*
 Robert Dale Campbell, Ph.D., *Professor of Geography*
 John Francis Latimer, Ph.D., *Professor of Classical Languages and*

Literatures

Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for*
Men

Roderic Hollett Davison, Ph.D., *Professor of European History*
 Calvin Weir Pettit, Ph.D., *Professor of Speech*
 Kathryn Mildred Towne, A.M., *Associate Professor of Home Economics*
 ‡Antonio Alonso, A.M., *Associate Professor of Spanish*
 Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
 ‡Wolfram Karl Legner, Ph.D., *Associate Professor of German*
 Elizabeth Burtner, A.M., *Associate Professor of Physical Education for*

Women

Robert Corbin Vincent, Ph.D., *Associate Professor of Chemistry*
 William Lewis Turner, Ph.D., *Associate Professor of English*
 §Averett Howard, A.M., *Associate Professor of English Composition*
 Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
 George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
 Robert Hamilton Moore, Ph.D., *Associate Professor of English Com-*

position

Edith Elizabeth Mortensen, Ph.D., *Associate Professor of Zoology*
 Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
 Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
 Muriel Hope McClanahan, Ph.D., *Associate Professor of English Com-*

position

Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
 Sam Clark Munson, Ph.D., *Associate Professor of Biology*

* On leave of absence 1954-55.

‡ On sabbatical leave spring term 1954-55.

§ On sabbatical leave fall term 1954-55.

- James Harold Coberly, Ph.D., *Associate Professor of American Literature*
- Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
- *William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
- Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
- Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
- Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
- Rafael Supervia, Doctor en Derecho, *Associate Professor of Spanish*
- James Willard Harkness, B.S., Ed.M., *Associate Professor of Chemistry*
- Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
- Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion*
- Phyllis Nichols Rowe, A.M., *Assistant Professor of English*
- Ronald Bettes Thompson, A.B., *Assistant Professor of European History*
- James Coogan, Ph.D., *Assistant Professor of Economics*
- Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Men*
- John Gage Allee, Jr., A.M., *Assistant Professor of English*
- Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
- Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*
- James Willis Robb, A.M., *Assistant Professor of Romance Languages*
- Ruth Elsie Jones, A.M., *Assistant Professor of English Composition*
- Howard Roland Ludden, A.M., *Assistant Professor of Political Science*
- Theodore Peter Perros, Ph.D., *Assistant Professor of Chemistry*
- Edith Shores Surrey, A.M., *Assistant Professor of Speech*
- Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
- Lee Sheward Bielski, A.M., *Assistant Professor of Speech*
- William Graham Clubb, A.M., *Assistant Professor of French*
- Walter David Fackler, A.B., *Assistant Professor of Economics*
- Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*
- Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
- Harland Walter Westermann, A.M., *Assistant Professor of Geography*
- Alton Harold Desmond, M.S., *Assistant Professor of Zoology*
- William Edward Schmidt, Ph.D., *Assistant Professor of Chemistry*
- David Gover White, B.Chem.Eng., Ph.D., *Assistant Professor of Chemistry*
- John Gibbert Palmer, M.S., *Assistant Professor of Botany*
- Earl Larkin Williams, A.M., *Lecturer in Mathematics*
- Raymond Howard Reno, A.M., *Instructor in English Composition*
- Roland Henry Tanck, A.M., *Instructor in Psychology*

* On sabbatical leave 1951-52

Chester Hayden McCall, Jr., A.M., *Instructor in Statistics*
 Joseph Louis Metivier, Jr., A.B., *Instructor in Romance Languages*
 Wilbur Earle Benson, M.B.A., *Instructor in Accounting*
 Herman Hedberg Hobbs, B.S., *Instructor in Physics*

COMMITTEES •

THE DEAN'S COUNCIL†

1955

Florence Marie Mears
 James Willard Harkness

1956

Ernest Sewall Shepard

1957

Sam Clark Munson
 James Willis Robb

COMMITTEE ON ADMISSION AND ADVANCED STANDING

George Martin Koehl, *Chairman*
 Carr Bartleson Lavell, *Vice-Chairman*
 Edith Elizabeth Mortensen
 Richard Catlin Haskett
 William Graham Clubb

COMMITTEE ON SCHOLARSHIP

William Lewis Turner, *Chairman*
 Carr Bartleson Lavell, *Vice-Chairman*
 George Martin Koehl
 Wolfram Karl Legner
 Mildred Hollander Shott
 Kathryn Mildred Towne
 Raymond George Hanken
 Theodore Peter Perros

JUNIOR COLLEGE ADVISORY COMMITTEE

Dean of the Junior College, *Chairman*
 Assistant Dean of the Junior College, *Vice-Chairman*
 Samuel Nathaniel Wrenn
 Carr Bartleson Lavell
 George Martin Koehl

* The President of the University and the Dean of the Junior College are members of all committees.

† Elected by the Faculty.

GENERAL INFORMATION

INTRODUCTORY

The Junior College, which administers the first two years of the standard four-year college program in the liberal arts and sciences, was established in 1930, as a part of the academic reorganization of the University. Prior to 1930, the four-year program had been administered by Columbian College since its organization in 1821.

The Junior College curricula continue the studies of a general cultural nature begun in the secondary schools, and lay a foundation for the more specialized work which is to follow. Emphasis is accordingly laid (1) upon the social, cultural, biological, and physical background of civilization and (2) upon the discipline necessary to the effective prosecution of more advanced work.

The Junior College also provides the pre-professional work required for admission to the schools of Pharmacy, Education, and Government, and the first two years of the pre-professional work required by the schools of Medicine and Law.

In addition it provides two-year curricula in vocational training.

ADVISORY SYSTEM

In order that students may have opportunities for assistance in planning their courses and also for obtaining personal, educational, and vocational advice in every phase of their academic work during the first two years, a number of members of the Faculty serve as advisers to Junior College students.

Members of the Faculty, selected for their knowledge of Junior College requirements and student programs, advise students in making up their programs of study for each term. A separate staff of experienced advisers under the chairmanship of the Dean assists those students who find it difficult to make adjustments to college life because of scholastic or other reasons. Students who are "warned" or who are on probation may be required to consult these advisers at regular intervals. Students are encouraged to consult any member of the Advisory Staff or their instructors about college problems at any time.

Copies of notices of "warning" or probation will be sent to the parents or guardians of students on request, and the Dean and members of the Advisory Staff are available for consultation with parents or guardians concerning student problems.

REGULATIONS

Students in the Junior College are subject to, and are expected to familiarize themselves with, the regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26, and the University regulations stated on pages 42-49.

SCHOLASTIC-APTITUDE TESTS

Students admitted to the Junior College may be required to take the scholastic-aptitude tests of the University.

REQUIRED PLACEMENT EXAMINATIONS

English.—Special placement examinations, required of all entering freshmen, will be conducted by the English Department. Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

Romance Languages.—A standardized placement examination will be required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination assignment will be made to the appropriate course with credit to be assigned on the usual basis. This does not apply to students whose previous experience in a given language is equivalent to two college years.

The Use of Correct English.—The use of correct English, oral or written, is required not only in English but also in all other courses (see page 79).

FIRST- AND SECOND-GROUP COURSES

A Junior College student may not take second-group courses (courses numbered 101-200) without the written permission of the instructor and of the Dean of the Junior College. A student will not be permitted to postpone a first-group course required under the curriculum for which he is registered in order to take a second-group course for elective credit. The principle that first-group courses must be taken in the Junior College years, and advanced courses in Columbian College and the professional schools, will be rigidly adhered to in approving student programs. No student on probation is permitted to take second-group courses except by the express permission of the Committee on Scholarship.

AMOUNT OF WORK

Fifteen or sixteen credit hours, not including required physical education, constitute normal work. A student not on probation may be permitted by the Dean to take seventeen credit hours.

A student having a quality-point index of 3.50 may, with the permission of the Dean, take eighteen or nineteen credit hours. No student may take more than 19 credit hours, except with the permission of the Committee on Scholarship.

For an employed student working more than twenty-four hours a week, nine credit hours, not including required physical education, constitute normal work. An employed student not on probation may be permitted by the Dean to take ten credit hours. An employed student having a quality-point index of 3.50 may be permitted by the Dean to take twelve or thirteen credit hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a term is required to report that fact immediately to the Dean, to bring his program within the limitations set by the Faculty for the amount of work to be carried by an employed student.

ATTENDANCE

The student is held responsible to the instructor in charge of the course for which he is registered for all the work of the course, and all absences must be excused before provision will be made for him to make up the work missed.

With the exceptions noted below, occasional absences, not to exceed in number for each term the credit hours for the term, will be automatically excused. (If a course has distinct divisions such as lectures, laboratories, recitations, etc., these excuses apply pro rata to such separate divisions.) In the application of this rule absences immediately preceding or following holiday periods are to be counted double.

Such automatic excuses are intended to cover the occasional minor exigencies and not to constitute an indiscriminate privilege. A student on probation is allowed no automatic excuses.

Excuses for absences from two or more consecutive class periods, and for absences from examinations which have been announced in advance, can be obtained only by making written application to the instructor in charge of the course.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean on recommendation of the instructor in the course.

CLASSIFICATION OF STUDENTS

A student who has satisfactorily completed at least thirty credit hours of work (exclusive of Physical Education 1-2 and 11-12) including eighteen credit hours in his curriculum requirements, is classed as a *sophomore*.

THE DEGREE OF ASSOCIATE IN ARTS

Upon the satisfactory completion of the requirements of the Junior College, the degree of Associate in Arts is conferred.

REQUIREMENTS FOR THE DEGREE

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 42 and 43.

In order to receive the degree of Associate in Arts a student must have a quality-point index of at least 2.00.

Honor Roll.—The name of every student who has a quality-point index of 3.50 or higher will be placed on the honor roll and published. No consideration is given to those who have completed a total of less than fifteen credit hours. A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.

Probation.—A student must maintain a quality-point index of at least 2.00 or be placed on probation.

A student remains on probation as long as his quality-point index is below 2.00; however, the student who has a quality-point index between 1.50 and 2.00 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

Suspension.—A student who has a quality-point index below 1.50 will be suspended; however, a student who has a quality-point index between 1.40 and 1.50 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. On application for readmission the student must submit specific evidence to the Committee on Scholarship that he is better qualified to pursue college work. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship rules are applied when a student has undertaken a minimum of twelve hours. Thereafter, the rules are applied in multiples of nine hours.

Warnings.—At stated intervals during the academic year instructors

file in the Office of the Junior College the names of those students who are doing work of *D* grade or lower. A "warning" will then be sent to the student and a copy of the warning filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity. "Warning periods" are established between the 7th and 8th weeks of the fall and spring terms.

CURRICULUM REQUIREMENTS

The satisfactory completion of sixty credit hours of college work, exclusive of physical education, is required as outlined in one of the Junior College curricula described below. At least fifteen of the required credit hours must be completed in residence.

Except for students registered for the combined degrees of Bachelor of Arts and Doctor of Medicine, not more than twelve credit hours of professional courses may be included in the one hundred and twenty credit hours required for the Bachelor's degrees in Columbian College. Junior College students electing professional courses under this rule must obtain the approval of the Dean of the Junior College.

Physical Education Requirements.—Physical Education is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", page 45.)

Foreign Language Requirements.—For the degree of Associate in Arts a student must have completed satisfactorily the equivalent of two years of college work in a single foreign language except in the pre-pharmacy and pre-physical education curricula and the terminal curricula in secretarial studies and accounting. (See "Placement Examination", page 58.)

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language. If he offers three units, he must complete the second term of the second-year college course in the same language. If he offers two units, he must complete the entire second-year college course in the same language. If he offers one unit, he must complete the second term of the first-year college course and the entire second-year course in the same language.

In some instances foreign languages are required or recommended as a preparation for advanced work in Columbian College and the professional schools. The student should consult his adviser as to these requirements, so that appropriate foreign languages may be included, when necessary, in his Junior College program.

English Requirements.—Entering students registering in the pre-Columbian College curricula will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2. This does not apply to students transferring to these curricula or students

registering in the pre-professional or vocational curricula. Students whose plans require the completion of English 1 and 2 before taking the required literature course must secure permission from the Dean.

Curricula for Admission to Columbian College and the Professional Schools

Each of the following curricula comprises the first two years of a standard four year college course and prepares the student for upper division work. Requirements for graduation from the Junior College may not be the same as the requirements for admission to Columbian College or a professional school. Therefore, the student should consult the specific admission requirements of the college or school for which he is preparing.

The first sixty credit hours of the ninety required for admission to the School of Medicine are undertaken in the Junior College. Each pre-medical program must be approved by the premedical adviser. For specific requirements, see "Admissions", pages 12-21.

COLUMBIAN COLLEGE:

1. ARTS AND LETTERS*

The following two-year curriculum prepares for the Bachelor of Arts program in Columbian College:

	Credit Hours
English Composition and Literature ‡	
English 1; 51-52, 71-72, 91-92, Classical Lan- guages 71-72, French 51-52, German 51-52, or Spanish 51-52; English 2	12
Foreign Language	See page 61 for foreign language requirement
Social Studies	Economics 1-2, Geography 51, 52, 71-72, His- tory 39-40, 71-72, Political Science 9-10, or Sociology 1-2
Science	Biology 1-2, Botany 1, 2, Chemistry 3-4, 11-12, Physics 5, 7 (6, 7), (5, 6), or Zoology 1-2
Physical Education	See page 45 for statement of requirement
Recommended Electives	Art 11-12, 71-72; Philosophy 51-52, 111-12; Religion 9-10, 59-60
Elective	16 or 18
Total	60 or 62

* Students who have had high school courses in chemistry, mathematics, and physics should consult the description of the beginning courses in these fields. For the degree of Bachelor of Science, the student should obtain the advice of the major departments as to proper prerequisites and collateral courses for the intended major.

‡ Incoming students registering in pre-Columbian College curricula will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2. This does not apply to students transferring to these curricula or students registering in the pre-professional or vocational curricula. Students whose plans require the completion of English 1 and 2 before taking the required literature course must secure permission of the Dean.

A. SCIENCE*

The following two-year curriculum prepares for the Bachelor of Science curriculum in Columbian College:

	Credit Hours
English Composition and Literature† ... English 1; 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, or Spanish 51-52; English 2.....	12
Foreign Language ... French or German or non-science elective.....	12
NOTE.—A reading knowledge of French or German is required. This may be satisfied by French 4 or German 4 or by special examination.	
Mathematics Mathematics 3, 6, or electives.....	6
NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	
Social Studies Economics 1-2, Geography 51-52, History 59-60, 71-72, Political Science 9-10, or Sociology 1-2	
or Recommended Electives Art 11-12, 71-72, Philosophy 51-52, 111-12, Religion 9-10, 59-60.....	6
Science (a) Biology 1-2, Botany 1, 2, Zoology 1-2 (b) Chemistry 11-12, Physics 5, 7 (6, 7) (5, 6).....	18 to 22
(In satisfying this requirement, at least one year-course must be taken in each group (a) and (b).)	
Physical Education .. See page 45 for statement of requirement.	
Elective§ 2 to 12	
Total.....	60 to 64

SCHOOL OF PHARMACY:

The following two-year curriculum prepares for the Bachelor of Science in Pharmacy curriculum in the School of Pharmacy:

	Credit Hours
English English 1, 2.....	6
Science Botany 1 or 2, Chemistry 11-12, Physics 5-6, Zoology 1 (Freshman year).....	21
Social Studies Chemistry 21, 22 (Sophomore year).....	8
Professional Courses Economics 1.....	3
Pharmacy 1-2 (Freshman year).....	3
Pharmacy 21-22, 23, 25 (Sophomore year)....	14

* See the first footnote on page 62.

† See the second footnote on page 62.

§ Credit is not given for courses elected in Physical Education or Secretarial Studies.

	Credit Hours
Physical Education .. See page 45 for statement of requirement.	
Elective	14
Total.....	69

SCHOOL OF EDUCATION:

1. EDUCATION

The following two-year curriculum prepares for the Bachelor of Arts in Education curriculum in the School of Education:

	Credit Hours
English	6
English 1, 2.....	6
English 51-52, 71-72, or 91-92.....	
Foreign Language ... (French, German, Latin, Russian, or Spanish.)	12
See page 61 for foreign language requirement..	6
Social Studies	
History 71-72	
Economics 1-2; Geography 71-72; History 39-40; Political Science 9-10; Religion 59-60; or Sociology 1-2. (Those offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from this requirement)	6
Science and Mathematics	
Two terms to supplement senior high school courses, selected from: Biology 1-2; Botany 1, 2; Chemistry 3-4, 11-12; Physics 5 and 6 or 7; Zoology 1-2; or Mathematics 3 and 6 or 6 and 12.....	6 or 8
Other Courses	6
Psychology 1 and 22.....	3
Speech 1 or 11.....	3
Statistics 53	
Physical Education .. See page 45 for statement of requirement.	4 to 6
Elective	60
Total.....	60

2. HOME ECONOMICS

The following two-year curriculum prepares for the Bachelor of Science in Home Economics curriculum in the School of Education:

	Credit Hours
English	6
English 1, 2.....	6
English 51-52, 71-72, Speech 1, 2 (1, 11).....	12
Social Studies*.....	6-8
Economics, History, Political Science, or Sociology	6
Science	
Biology 1-2, Chemistry 11-12, Physics 5, 6, 7.....	
Psychology	
Psychology 1, 29	
Physical Education .. See page 45 for statement of requirement.	

* Courses selected with the recommendation of the adviser in the Department of Home Economics.

Curriculum	Credit Hours
Prerequisites Home Economics 1, 22 (Freshman year).....	6
Home Economics 51, 62 (Sophomore year)....	6
Academic Electives.. (Freshman year)	6
(Sophomore year)	4-6
Total.....	60

3. PHYSICAL EDUCATION FOR MEN

The following two-year curriculum prepares for the Bachelor of Science in Physical Education curriculum in the School of Education:

	Credit Hours
English English 1, 2.....	6
Social Studies History 39-40, 71-72; Political Science 9-10; or Sociology 1-2 (Freshman year).....	6
Economics, History, or Political Science (Sophomore year)	6
Science Biology 1-2 or Zoology 1-2 (Freshman year) ..6 or 8	
Physical Education	8
Curriculum Requirements Physical Education 43-44, 47; Speech 1 or 11 (Freshman year)	9
Physical Education 45-46, 49, 50, 58; Psychology 1, 22 (Sophomore year).....	18
Elective	7-9
Total.....	68

4. PHYSICAL EDUCATION FOR WOMEN

The following two-year curriculum prepares for the Bachelor of Science in Physical Education curriculum in the School of Education:

	Credit Hours
English English 1, 2.....	6
English 51-52, 71-72, or 91-92.....	6
Social Studies History 39-40, 71-72; Political Science 9-10; or Sociology 1-2	6
Science Biology 1-2 or Zoology 1-2.....	6 or 8
Physical Education .. See page 45 for statement of requirement.	
Curriculum Requirements Physical Education 43-44 (Freshman year)....	4
Physical Education 49, 50, 51-52; Psychology 1, 22 (Sophomore year).....	16
Academic Electives.. (Each year)	6 or 8
Total	60

SCHOOL OF GOVERNMENT:**1. ACCOUNTING AND BUSINESS ADMINISTRATION**

The following two-year curriculum prepares for the Bachelor of Arts in Government curricula in Accounting and in Business Administration in the School of Government:

	Credit Hours
Accounting Accounting 1-2	6
English English 1, 2, 11.....	9
Foreign Language ... See page 61 for foreign language requirement...	12
Social Studies Economics 1-2	6
..... History 71-72 or Political Science 9-10*	6
..... Speech 1	3
Statistics Statistics 51, 52.....	6
Physical Education .. See page 45 for statement of requirement.	
Elective (Students interested in Foreign Commerce in- clude Geography 51).....	12
Total.....	60

2. FOREIGN AFFAIRS

The following two-year curriculum prepares for the Bachelor of Arts in Government curriculum in Foreign Affairs in the School of Government:

	Credit Hours
English English 1, 2.....	6
Foreign Language ... See page 61 for foreign language requirement...	12
Social Studies Economics 1-2; History 39-40, 71-72; Political Science 9-10	24
Mathematics, Science, Biology, Botany, Chemistry, Mathematics, Phys- ics, Statistics, or Zoology.....	6 or 8
Physical Education .. See page 45 for statement of requirement.	
Elective (To satisfy minimum required credits. Students interested in Foreign Service include Geog- raphy 51)	12
Total.....	60 or 62

3. BUSINESS AND ECONOMIC STATISTICS

The following two-year curriculum prepares for the Bachelor of Arts in Government curriculum in Business and Economic Statistics in the School of Government:

	Credit Hours
English English 1, 2.....	9
Foreign Language ... See page 61 for foreign language requirement...	12

* Business Administration majors should elect Political Science 9-10 which is prerequisite to Political Science 127-28, required in the School of Government.

	Credit Hours
Social Studies Economics 1-2; Philosophy 51-52.....	12
Mathematics Mathematics 20 and prerequisites.....	3 to 12
Accounting Accounting 1-2	6
Statistics Statistics 51 or 91-92.....	3 or 6
Physical Education .. See page 45 for statement of requirement.	
Elective	6 to 18
Total.....	60

VOCATIONAL CURRICULA

In addition to the above curricula, all of which prepare for admission to upper division colleges and schools, the Junior College offers the following two-year terminal courses.

1. SECRETARIAL STUDIES

	Credit Hours
English English 1, 2.....	6
..... English 51-52, 71-72, or 91-92.....	6
Social Studies Economics 1-2	6
General Accounting 1	3
..... Speech 11	3
Secretarial Studies* .. Secretarial Studies 1, 2, 11, 12, 15, 16, 51, and 54	24
Physical Education .. See page 45 for statement of requirement.	
Elective (To be selected with approval of adviser).....	12
Total.....	60

2. ACCOUNTING

The required work may be completed in two years on a full-time basis or in three years on a part-time basis, with the approval of the adviser.

REQUIRED COURSES

	Credit Hours
Accounting 1-2 Introductory Accounting	6
Accounting 101 Cost Accounting	3
Accounting 111 Financial Statement Analysis	3
Accounting 121-22 .. Intermediate Accounting	6
Accounting 155 Business Budgeting	3
Accounting 161 Business Taxation	3
Accounting 171 Auditing	3
Accounting 181 Accounting Systems	3

* Qualified students, upon the approval of the adviser or the satisfactory completion of a placement test, may waive Secretarial Studies 1, 11, and 12. Other courses, approved by the adviser, will be substituted.

	Credit Hours
Accounting 191 Advanced Accounting	3
Business Administration 131 Business Finance	3
Economics 1-2 Principles of Economics	6
English 1, 2 English Composition	6
Political Science 127 Commercial Law: Contracts, Agency, and Bail- ments	3
Political Science 128 Commercial Law: Negotiable Instruments, Prop- erty, Sales, Mortgages	3
Physical Education See page 45 for statement of requirement.	
Elective (To be selected with the approval of the ad- viser)	6
Total	60

Examinations for Waiving Curriculum Requirements*

A student desiring to omit a required course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum requirements in that subject and may qualify for registration in an advanced course. Passing this examination does not entitle the student to any hours of credit toward the degree. A student desiring to take such examinations should make written request of the Dean and pay the required fee at the Office of the Treasurer before the date of the examination specified in the University calendar.

HONORS

The degree of Associate in Arts may be conferred "with distinction" upon the student who has a quality-point index of 3.50 or higher, provided that student has been in residence at the University for 30 hours, 15 of which must have been taken in the Junior College at the time the index is calculated.

* This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.

COLUMBIAN COLLEGE

THE FACULTY AND STAFF OF INSTRUCTION*

Henry Grattan Doyle, A.M., LL.D., Litt.D., *Dean of Columbian College*

Calvin Darlington Linton, Ph.D., *Assistant Dean of Columbian College*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*

Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*

Joseph Hiram Roe, Ph.D., *Professor of Biochemistry*

Norris Ingersoll Crandall, M.Arch., *Professor of Art*

Robert Whitney Bolwell, Ph.D., *Professor of American Literature*

Walter Lynn Cheney, Ph.D., *Professor of Physics*

†James Henry Taylor, Ph.D., *Professor of Mathematics*

Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*

Errett Cyril Albritton, A.B., M.D., *Fry Professor of Physiology*

George Gamow, Ph.D., *Professor of Theoretical Physics*

Warren Reed West, Ph.D., *Professor of Political Science*

Frank Mark Weida, Ph.D., *Professor of Statistics*

Francis Edgar Johnston, Ph.D., *Professor of Mathematics*

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology*

Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*

Mitchell Dreece, Ph.D., *Professor of Educational Psychology*

Merle Irving Protzman, Ph.D., *Professor of Romance Languages*

Florence Marie Mears, Ph.D., *Professor of Mathematics*

Wood Gray, Ph.D., *Professor of American History*

Thelma Hunt, Ph.D., M.D., *Professor of Psychology*

Ira Bowers Hansen, Ph.D., *Professor of Zoology*

Paul William Bowman, Ph.D., *Professor of Biology*

Lawson Edwin Yocum, Ph.D., *Professor of Botany*

†Arthur Edward Burns, Ph.D., *Professor of Economics*

John Withrow Brewer, Ph.D., *Professor of International Law*

Louis Clark Keating, Ph.D., *Professor of Romance Languages*

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*

Harold Loran Geisert, Ph.D., *Professor of Sociology*

Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*

* The President of the University, the Dean of Faculties of the University, the Dean and the Assistant Dean of the College, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.

† On sabbatical leave spring term 1954-55.

- *Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
 Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
 Ernest Sewell Shepard, A.M., *Professor of English Literature*
 George Winchester Stone, Jr., Ph.D., *Professor of English Literature*
 Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
 Alan Thomas Deibert, A.M., *Professor of Romance Languages*
 Chester Elwood Leese, Ph.D., *Professor of Physiology*
 Donald Stevenson Watson, Ph.D., *Professor of Economics*
 †Myron Law Koenig, Ph.D., *Professor of American History*
 Calvin Darlington Linton, Ph.D., *Professor of English Literature*
 Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
 Charles Edward Gausa, Mus.B., Ph.D., *Elton Professor of Philosophy*
 Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
 Elbridge Colby, Ph.D., *Professor of Journalism*
 Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art*
 Charles William Cole, Ph.D., *Professor of American Literature*
 George Martin Koehl, A.M., *Professor of Physics*
 Lubin Poe Leggette, A.M., *Depew Professor of Speech*
 Joseph Richard Sizoo, A.M., S.T.D., D.D., Litt.D., *Milbank Professor of Religion*
 Robert Dale Campbell, Ph.D., *Professor of Geography*
 John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures*
 Roderic Hollett Davison, Ph.D., *Professor of European History*
 Calvin Weir Pettit, Ph.D., *Professor of Speech*
 William Webster Deihl, Ph.D., *Adjunct Professor of Mycology*
 Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
 §Antonio Alonso, A.M., *Associate Professor of Spanish*
 Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
 §Wolfram Karl Legner, Ph.D., *Associate Professor of German*
 Robert Corbin Vincent, Ph.D., *Associate Professor of Chemistry*
 Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Associate Professor of Political Science*
 Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
 George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
 Robert Hamilton Moore, Ph.D., *Associate Professor of English Composition*
 Edith Elizabeth Mortensen, Ph.D., *Associate Professor of Zoology*
 Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
 Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*

* Professional Lecturer while on leave of absence as Professor 1954-55.

† On leave of absence 1954-55.

‡ On sabbatical leave spring term 1954-55.

Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
 Sam Clark Munson, Ph.D., *Associate Professor of Biology*
 James Harold Coberly, Ph.D., *Associate Professor of American Literature*

Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
 *William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
 James Norman Mosel, A.M., *Associate Professor of Psychology*
 Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
 Rafael Supervia, Doctor en Derecho, *Associate Professor of Spanish*
 William Columbus Davis, Ph.D., *Associate Professor of Latin American History*

Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion*
 Lewis Slack, Ph.D., *Associate Professor of Physics*
 Ronald Bettes Thompson, A.B., *Assistant Professor of European History*
 James Coogan, Ph.D., *Assistant Professor of Economics*
 John Gage Allee, Jr., A.M., *Assistant Professor of English*
 Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
 Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*
 Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*
 Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
 Theodore Peter Perros, Ph.D., *Assistant Professor of Chemistry*
 Walter David Fackler, A.B., *Assistant Professor of Economics*
 Helen Zhenchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*
 Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
 Harland Walter Westermann, A.M., *Assistant Professor of Geography*
 Alton Harold Desmond, M.S., *Assistant Professor of Zoology*
 William Edward Schmidt, Ph.D., *Assistant Professor of Chemistry*
 John Gibbert Palmer, M.S., *Assistant Professor of Botany*
 Edward Turner, Jr., M.S., *Assistant Professor of Physics*
 Alberto Vázquez, Ph.D., *Lecturer on Spanish American Literature*

COMMITTEES ‡

THE DEAN'S COUNCIL §

1955

Florence Marie Mears
 Wolfgang Herbert Kraus

1956

Robert Corbin Vincent
 John Gage Allee, Jr.

1957

Merle Irving Protzman
 James Harold Coberly

* On sabbatical leave 1954-55.
 ‡ The President of the University and the Dean of Columbian College are members ex officio of all committees.

§ Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING

Calvin Darlington Linton, *Chairman*
 Edith Elizabeth Mortensen, *Secretary*
 Alan Thomas Deibert Charles William Cole
 James Coogan

COMMITTEE ON THE USE OF CORRECT ENGLISH

Averett Howard, *Chairman*
 George Francis Henigan, Jr. Edith Elizabeth Mortensen
 Muriel Hope McClanahan Robert Hamilton Moore

COMMITTEE ON SCHOLARSHIP

Fred Salisbury Tupper, *Chairman*
 Florence Marie Mears Samuel Nathaniel Wrenn
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COMMITTEE ON STUDIES

The Dean of the College, *Chairman*
 Phyllis Nichols Rowe Edith Elizabeth Mortensen
 (*Languages and Literatures*) (*Natural Sciences*)
 Everett Herschel Johnson Donald Stevenson Watson
 (*Mathematics and Physical* (*Social Sciences*)
 Sciences)

DIVISIONAL ORGANIZATIONS

LANGUAGES AND LITERATURES

William Lewis Turner, *Chairman*
 John Francis Latimer, *Secretary*

Educational Committee

Phyllis Nichols Rowe, *Chairman* James Willis Robb
 Wolfram Karl Legner

MATHEMATICS AND THE PHYSICAL SCIENCES

George Martin Koehl, *Chairman*
 David Gover White, *Secretary*

Educational Committee

Everett Herschel Johnson, *Chairman*
Mary Louise Robbins James Willard Harkness

NATURAL SCIENCES

Thelma Hunt, *Chairman*

Educational Committee

Edith Elizabeth Mortensen, *Chairman*
Chester Elwood Leese Curtis Edward Tuthill

SOCIAL SCIENCES

Wilson Emerson Schmidt, *Chairman*
Howard Rowland Ludden, *Secretary*

Educational Committee

Donald Stevenson Watson, *Chairman*
Lubin Poe Leggett Roderic Hollett Davison

GENERAL INFORMATION

INTRODUCTORY

Columbian College was founded in 1821. James Monroe, then President of the United States, aided in obtaining the charter from Congress which established "The Columbian College in the District of Columbia" for the "sole and exclusive purpose of educating youth in the English, learned and foreign languages, the liberal arts, sciences and literature", with full power to confer all degrees "usually granted and conferred in colleges".

In 1930, when the Junior College was established, the name "Columbian College" was bestowed upon the senior college of liberal arts.

THE COLUMBIAN COLLEGE PROGRAM

Columbian College is that branch of the University which grants the Bachelor's and Master's degrees in the liberal arts. Its purpose is to enable the student to develop harmoniously both his particular abilities and his general awareness as a human being. It demands of the student a thorough acquaintance with one major area of learning and at the

same time an understanding of how that field of specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

The program is a contemporary application of the historic liberal arts tradition. A particular vitality and meaning are imparted to it by the fact that The George Washington University is situated in the cosmopolitan capital city of a nation to which, increasingly, the world looks for leadership. Here, uniquely, the liberal arts tradition is put to the test of contact with reality.

DIVISIONAL ORGANIZATION

The following divisions have been established in The George Washington University based on the relationship of course content, interrelation of methods and prerequisites, and similarity of background and viewpoint:

1. *The Division of Languages and Literatures.*—The departments of Classical Languages and Literatures, English, Germanic Languages and Literatures, and Romance Languages and Literatures.
2. *The Division of Mathematics and the Physical Sciences.*—The departments of Biochemistry, Chemistry, Mathematics, Pharmacology, Physics, and Statistics.
3. *The Division of the Natural Sciences.*—The departments of Anatomy, Bacteriology, Biology, Botany, Geology, Neurology, Pathology, Physiology, Psychology, and Zoology.
4. *The Division of the Social Sciences.*—The departments of Accounting, Business Administration, Economics, Education, Geography, History, Law, Philosophy, Political Science, Religion, Sociology, and Speech.

The departments under these University divisions function for Columbian College only in such fields of study as are appropriate for a senior college of arts, letters, and sciences.

REGULATIONS

Students in Columbian College are subject to, and are expected to familiarize themselves with, the regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26, and the University regulations stated on pages 42-49.

PREREQUISITES

It is assumed that a student entering Columbian College has met the requirements of the Junior College under the *Arts and Letters* curriculum or the *Science* curriculum. Following is a summary of these prerequisites:

The *Arts and Letters* curriculum: (1) English composition (6 credit

hours) and an additional year course (6 credit hours) in English, American, European literature, Classical, or any other foreign literature. (2) Two college years (at least 12 credit hours) of a single foreign language or the equivalent (see foreign-language requirement, page 61), are required. A transfer student who has had foreign-language courses in another institution meeting 4 or 5 times a week may have acquired as much as 12 credit hours in a foreign language without having taken four terms (two full years). Such a student is required to take additional work here in the same language until he has completed four terms (or an equivalent combination of high school years and college terms).

(3) At least one year (6 credit hours) in social studies, chosen from first-group courses in History, Political Science, Economics, or Sociology, is required. (4) At least one year (6 or 8 credit hours) of a laboratory science (Biology, Botany, Chemistry, Physics, or Zoology) is required.

The remaining hours of the Junior College programs (roughly a minimum of 22 to 24 hours) should be devoted to the prerequisite courses required by the prospective major department (as stated following the departmental staff in the courses of instruction section of the CATALOGUE) or recommended by the advisers in the field-of-study major (see pamphlets prepared by the respective advisers), together with appropriate electives.

The *Science* curriculum requirements in English are the same as those of the Arts and Letters curriculum. A year course of a social study or of a recommended elective in Art, Philosophy, or Religion is required. The foreign-language requirement is the same as for the Arts and Letters curriculum, except that French or German is specified. At least 6 credit hours in Mathematics must be taken; additional work in Mathematics is required of prospective majors in Chemistry or Physics. In science, the student should take courses in both biological and physical sciences, bearing in mind the prerequisites stated by the department under which he expects to major as well as specified prerequisites in certain departments (such as Mathematics and Chemistry for majors in Physics, or Mathematics and Physics for majors in Chemistry.)

A transfer student admitted to Columbian College with deficiencies in freshman or sophomore work (whether in amount or in distribution of courses), corresponding to the programs outlined above, is required to begin to make up such deficiencies immediately upon admission to Columbian College, and to carry courses for the purpose each term until all the general education requirements described above are satisfied. Students transferring from the School of Government must complete pre-Columbian College requirements in science and in literature (or Art, Classical Languages, or Philosophy), as prescribed in the Arts and Letters curriculum.

AMOUNT OF WORK

A full-time student who is not on probation may take ordinarily not more than seventeen credit hours. A student employed more than twenty-four hours a week, who is not on probation, may take not more than ten credit hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than nineteen credit hours. An employed student who meets the same standard may take not more than twelve credit hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a term is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ATTENDANCE

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up the work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term-papers and examinations, are met.

CLASSIFICATION OF STUDENTS

A student who has completed less than thirty credit hours in Columbian College, and who has registered his major at the Office of the Registrar is classed as a *junior*. A student who has completed thirty credit hours in Columbian College, including at least one course in his major, is classed as a *senior*. A student who has satisfactorily completed the work for the Bachelor's degree, and whose program of study has been approved and filed in the Office of the Registrar, is classed as a *master in course*.

INDEPENDENT STUDY PLAN

Under the independent study plan a student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the division in which the subject falls. Credit under this plan is limited to the specific course-credits as designated in the list of courses of instruction in the CATALOGUE.

CORRESPONDENCE AND HOME-STUDY COURSES

No credit is given for work done by correspondence or in home-study courses.

THE BACHELOR'S DEGREES

Upon the satisfactory completion of the undergraduate requirements of Columbian College, the degree of Bachelor of Arts or Bachelor of Science is conferred.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

For the residence requirement, see page 46. Students intending to transfer to Columbian College from a non degree-granting division of the University should note specifically the regulation concerning transfer within the University, see page 44.

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 42 and 43.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, the student with a Departmental Major must have a quality-point index of at least 2.50 in his major subject. Grades in courses taken at other institutions are not considered in computing the quality-point index. The student with a Field-of-Study Major meets the qualitative requirement by passing the Major Examination.

In computing the quality-point index in the major, all second-group and third-group courses in the major field taken at The George Washington University are included, even though minimum requirements for the major may have been exceeded, except when registration for graduate credit is approved. Grades received in first-group courses are not considered.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—A student who has a quality-point index below 1.50 or who is placed on probation for a third term, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate

that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of fifteen credit hours.

CURRICULUM REQUIREMENTS

The curriculum requirements for the Bachelor's degrees include at least sixty credit hours beyond the requirements of the Junior College (the curriculum in *Arts and Letters* or in *Science*) and the satisfactory completion of the major. Each program must be approved by the major adviser and by the Dean.

At least twenty-four credit hours of the last sixty credit hours counted towards the Bachelor's degree must be taken in subjects* not included in the major field or department. The student should consult his major adviser at each registration regarding the inclusion in his program of suitably distributed electives.

Except for students registered for the combined degrees of Bachelor of Arts and Doctor of Medicine, not more than twelve credit hours of professional courses may be included in the one hundred and twenty credit hours required for the Bachelor's degrees in Columbian College. Columbian College students electing professional courses under this rule must obtain the approval, in advance, of the Dean of Columbian College. Ordinarily courses in Physical Education and technical courses in Education will not be approved for credit toward a degree in Columbian College.

After selecting a curriculum, a student may not change to another except by permission of the Dean and on condition that he fulfill the requirements of the curriculum to which he changes which are in effect at the time the change is approved by the Dean.

Each student is required to select and file with the Registrar a choice of major upon entering Columbian College. He may change the major only with the consent of the Dean and of the department or division concerned, and must meet the requirements for the new major which are in effect at the time the change is approved by the Dean.

First-group courses may be required as prerequisites to undergraduate-major programs, but because of their introductory character may not be counted as part of such programs. (See "Explanation of Course Numbers".)

Students transferring from other institutions with major requirements wholly or substantially met will, nevertheless, be required to complete

* Art, Biology, Botany, Chemistry, Classical Languages and Literatures, Economics, Geography, Geology, Germanic Languages and Literatures, History, Journalism, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Romance Languages and Literatures, Social Sciences and Literatures, Sociology, Speech, Statistics, Zoology.

satisfactorily at least twelve credit hours of approved work in the major field in The George Washington University in order to receive a Bachelor's degree. This work will count as part of the minimum residence requirement.

Examinations for Waiving Curriculum Requirements.—A student desiring to omit a required or prerequisite course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum or prerequisite requirement in that subject and may qualify for registration in an advanced course. Passing of this examination shall not entitle him to any credit toward a degree. A student desiring to take such examinations should make written request of the Dean and pay the required fee at the Office of the Treasurer before the date of the examination specified in the University calendar.

Use of Correct English.—Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

Bachelor of Arts

The work of the junior and senior years, including a major in one of the following major fields, must be approved by the major adviser and by the Dean.

Major Fields.—American Thought and Civilization, Art (Appreciation or Drawing and Painting), Biology, Botany, Chemistry, Economics, English Literature, French Literature, Geography, Geology, Germanic Languages and Literatures, History, Journalism (News-Editorial or Public Relations), Latin American Civilization, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Sociology, Spanish American Literature, Spanish Literature, Speech, Statistics, Zoology.

Combined Degrees of Bachelor of Arts and Doctor of Medicine.—A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements (see pages 15-16); (2) fulfill the Junior College Arts and Letters requirements (see page 62); (3) fulfill the Columbian College residence requirement of at least thirty credit hours; (4) obtain the approval of the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of

the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

Bachelor of Science

The work of the junior and senior years, including a major in one of the sciences mentioned below, must be approved by the major department or division and by the Dean.

Biological Sciences

Biology
Botany
Zoology

Physical Sciences

Chemistry
Mathematics
Physics
Statistics

THE UNDERGRADUATE MAJOR*

There are two types of undergraduate majors: the field-of-study major and the departmental major.

THE FIELD-OF-STUDY MAJOR

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the division or divisions concerned.

The *Field-of-Study Major* requires no specific number of credit hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the over-all general requirements for the degree (at least 120 credit hours, plus required physical education, with a quality-point index of at least 2.00). The Major Examination in the Field-of-Study Major replaces all of the traditional quantitative and qualitative requirements for a major. Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality or knowledge of his major usually defined in terms of credit hours, courses, grades, and a better-than-average quality-point index. A pamphlet prepared under the direction of the adviser in the field of study and obtainable either from the adviser or from the Office of the Dean of Columbian College provides the information needed by the prospective student, who should place himself under the direction of the appropriate adviser in-

* For a complete description of the undergraduate major, see the special bulletin.

mediately upon completing Junior College work and beginning his junior year (the first senior-college year) in Columbian College.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, reading habits, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in the field gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and abilities. A close student-adviser relationship is essential for the student's success under the Field-of-Study Major plan.

The following Field-of-Study Majors are offered: (1) American Thought and Civilization, (2) Biology, (3) English Literature, (4) French Literature, (5) History, (6) Latin American Civilization, (7) Philosophy, (8) Spanish American Literature, (9) Spanish Literature, (10) Statistics, (11) Zoology.

The major in Biology extends broadly over the work of its division; and those in American Thought and Civilization and in Latin American Civilization involve studies in two divisions, those of Languages and Literatures and of Social Studies. The other Field-of-Study Majors, with the exception of the major in Spanish American Literature, replace departmental majors in their respective fields. A candidate for a Bachelor's degree with a major in Biology, English Literature, French Literature, History, Philosophy, Spanish American Literature, Spanish Literature, Statistics, or Zoology must elect a Field-of-Study Major.

Proseminar in the Major

For the convenience of the student a proseminar is offered in each field of study, under the supervision of the division in which the major is taken. This course, planned and administered by the professor or adviser of the major subject, will advise, guide, and instruct the student in his reading, study, and laboratory exercises in order to assist him in gaining a coordinated knowledge of his field. It is a presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required. Six credit hours, but no qualitative grade, may be assigned. When registered in this course, the student will have the privilege of visiting, subject to the approval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

THE MAJOR EXAMINATION

The Major Examination will normally be taken by the student at the close of the senior year; in the case of a student on a limited schedule, the Major Examination may be taken not earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Columbian College Committee on Studies, be reexamined at a later regular major-examination period. The educational committees of the respective divisions will have general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations will be held in each regular term on dates fixed by the respective educational committees, but in no case later than January 15 for the fall term, May 15 for the spring term, and August 7 for the summer term.

DEPARTMENTAL MAJORS

Departmental Majors, unlike *Field-of-Study Majors*, are specifically defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned in the section of the CATALOGUE devoted to courses of instruction. The Executive Officer of the Department, or his representative at registration, should be consulted concerning the student's program of courses, and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Executive Officer or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. As far as possible the close student-adviser relationship developed in the Field-of-Study Major will be cultivated also in Departmental Majors.

Until further notice Departmental Majors will be offered in the following: Art (Appreciation, Drawing and Painting), Botany, Chemistry, Economics, Geography, Geology, Germanic Languages and Literatures, Journalism (News-Editorial or Public Relations), Mathematics, Physics, Political Science, Psychology, Religion, Sociology, and Speech.

THE MASTER'S DEGREES

Upon the satisfactory completion of the graduate requirements of Columbian College, the degree of Master of Arts or Master of Science is conferred.

DEFINITION OF THE MASTER'S WORK

The study leading to the degree of Master of Arts or Master of Science is a comprehensive survey of a field of knowledge. It is a continuation of the work of the student's undergraduate major and involves a greater acquaintance with scholarly method.

The student must satisfy certain minimum requirements as to previous preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's Examination (together with such other examinations involving special skills or techniques as the department or division may require), is the basis upon which the Master's degree is conferred.

MASTER OF ARTS

Graduate work leading to the degree of Master of Arts is offered in the following fields:

American Literary and Cultural History, Bacteriology, Biochemistry, Biology, Botany, Chemistry, Economics, English and American Literature, English Literature, French Literature, Geography, Geology, Germanic Languages and Literatures, History, Latin American Civilization, Mathematics, Pharmacology, Philosophy, Physics, Physiology, Political Science, Psychology, Sociology, Spanish American Literature, Spanish Literature, Statistics, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the appropriate division or divisions.

MASTER OF SCIENCE

Graduate work leading to the degree of Master of Science is offered in the following fields:

Anatomy, Bacteriology, Biochemistry, Biology, Botany, Chemistry, Mathematics, Pharmacology, Physics, Physiology, Psychology, Statistics, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the appropriate division or divisions.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

An academic year of residence in Columbian College is required, i.e., completion of a minimum of thirty credit hours of work including the

thesis, which is counted as the equivalent of six credit hours of course work. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than twelve credit hours (which must be approved in advance by the Dean of Columbian College) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in Columbian College. No part of the minimum requirement may be taken elsewhere. All work for the degree of Master of Arts or Master of Science must be completed within a maximum of three years, unless the Dean's Council considers the circumstances so unusual as to justify an extension of time.

SCHOLARSHIP

A Master's candidate must attain the grade of "Ex." (excellent) in at least six credit hours of the course requirements for the degree in order to receive the Master's degree.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the Division under which the student is working. A Master's candidate who accumulates nine credit hours or more of "Unsat." (including grades of "C" or lower in prerequisite courses) will be automatically suspended. Regarding the system of grading, see pages 42 and 43.

PROGRAM OF STUDIES

The student's program of studies must be outlined in detail at the beginning of his work, in triplicate, on forms available at the Office of the Dean. Each program is subject to the approval of the department and the division. The program may be revised as the occasion requires, but any change necessitates a repetition of the procedure just described.

The candidate for the Master's degree ordinarily may specialize exclusively in the field of his choice. Any student, however, whose undergraduate training does not include at least one full year of work in each of the following areas of study: (1) mathematics or science (with or without laboratory), (2) social science, and (3) the humanities (literature, philosophy, art, music, or religion), must make up this deficiency in his general education before being admitted to candidacy for Master of Arts degree. This last provision does not apply to candidates for the Master of Science degree.

Courses numbered from 1 to 100 may not be credited toward the Master's degrees, but may in certain instances be required as a basis for advanced work. At least six credit hours of the course work required for the Master's degree must be taken in courses numbered over 200. Courses numbered over 100 may be credited toward the degree, pro-

vided the completion of additional work has been certified by the appropriate officer of instruction. (See "Explanation of Course Numbers".)

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree is strongly advised so to plan his program from the beginning that work for the lower degree may help to prepare him for the higher.

FOREIGN LANGUAGE REQUIREMENT

Before being admitted to candidacy the student must show that he has a reading knowledge (certified by the appropriate foreign-language department) of at least one modern foreign (European) language, selected by the division under which he is studying. A student whose field is a modern foreign language or literature may not offer that language in satisfaction of the reading-knowledge requirement. Any Master's candidate who chooses to meet the Master's language requirement in French or German and has not passed the French or German foreign language examination by the end of fifteen attempted credit hours must register for French 49 or German 49 as part of his next registration. In the case of Spanish no similar course is available at present. The Master's reading examinations in French and Spanish will be given at the first class meeting of French 49, in German at the first meeting of German 49, and again at the end of the courses. These examinations are open to all Master's candidates, whether enrolled in the courses or not; however, a candidate not enrolled who expects to present himself for any of the regularly scheduled examinations should notify the Dean at least a week in advance. Those enrolled in French 49 or German 49 who pass the first examination are excused from the course and will receive a refund of tuition. Students who expect to take a reading examination in any approved language other than French, Spanish, or German should notify the Dean at the time of registration.

ADMISSION TO CANDIDACY

A student must be admitted to candidacy before he begins the last half of his work for the Master's degree. Application for admission to candidacy is made on a form obtained at the Office of the Dean, and must be approved by the appropriate representative of the department or division and by the Dean. If a prospective candidate, in his previous academic work, has not substantially satisfied the prerequisites for the Master's degree, including the undergraduate major as defined by the appropriate department or division, he will not be admitted to candidacy until such deficiency has been made up. He may make up his deficiencies by electing appropriate courses in addition to those counted towards his degree.

THE MASTER'S THESIS

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final term. The choice of the thesis subject must be approved by the professor in charge of the student's field and recorded in the Office of the Registrar by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of three credit hours a term for two successive terms. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire six credit hours during a single term. The typewritten thesis in its final form must be submitted by the student for the approval of the professor in charge of the student's field and of the educational committee of the division concerned, not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 46-47, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

THE MASTER'S EXAMINATION

In addition to such other examinations as may be required, the candidate must pass a general written examination on the major subject. Examinations will be held on dates fixed by the respective educational committees, but in no case later than January 15 for the fall term, May 15 for the spring term, and August 7 for the summer term. The provisions of the field-of-study plan for undergraduate majors which concern the general examination for the major also apply to the Master's Examination. A candidate who fails to pass the Master's Examination may, in exceptional circumstances and with the specific approval of the division concerned, repeat the examination, but only after the lapse of one term. If he fails a second time, no further opportunity to take the examination will be permitted.

THE GRADUATE COUNCIL

Robert Whitney Bolwell, Ph.D., *Chairman of the Graduate Council*

MEMBERS OF THE COUNCIL •

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
 Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
 Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
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 †James Henry Taylor, Ph.D., *Professor of Mathematics*
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 Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
 Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
 §Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
 Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*

* The President of the University, the Dean of Faculties of the University, and the Registrar of the University are members of the Council.

‡ On sabbatical leave spring term 1954-55.

§ Professional Lecturer while on leave of absence as Professor 1954-55.

- George Winchester Stone, Jr., Ph.D., *Professor of English Literature*
 Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
 Chester Elwood Leese, Ph.D., *Professor of Physiology*
 Donald Stevenson Watson, Ph.D., *Professor of Economics*
 Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
 Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
 Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
 Roderic Hollett Davison, Ph.D., *Professor of European History*
 William Webster Diehl, Ph.D., *Adjunct Professor of Mycology*
 *Antonio Alonso, A.M., *Associate Professor of Spanish*
 Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Associate Professor of Political Science*
 Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
 Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
 Sam Clark Munson, Ph.D., *Associate Professor of Biology*
 Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
 ‡William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
 Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
 William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
 James Norman Mosél, A.M., *Associate Professor of Psychology*
 Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*

CONSULTANTS IN RESEARCH

- Samuel Jacob Aji, Ph.D., *Chief, Microbiological Chemistry Section, Department of Bacteriology, Army Medical Service Graduate School, Walter Reed Army Medical Center; Bacterial Physiology and Nutrition*
 Joseph William Ballantine, A.B., LL.D., *Consultant, Brookings Institution; The Far East*
 Zoltan Bay, Ph.D., *Research Professor of Physics, The George Washington University; Electronics*
 Harry Borthwick, Ph.D., *Senior Plant Physiologist; Director of Photoperiod Division, Bureau of Plant Industry, United States Department of Agriculture; Plant Physiology*
 George McSpadden Briggs, Ph.D., *Chief, Nutrition Unit, Laboratory of Biochemistry and Nutrition, National Institute of Arthritis and Metabolic Diseases; Animal Nutrition*
 Dean Burk, Ph.D., *Head, Cytochemistry Unit, National Cancer Institute; Tissue Respiration in Biochemistry*
 Gerhard Colm, Dr. rer. pol., *Chief Economist, National Planning Association; Public Finance; National Income*

* On sabbatical leave spring term 1954-55

‡ On sabbatical leave 1954-55

- François Naftali Frenkiel, Ph.D., *Physicist, Applied Physics Laboratory, The Johns Hopkins University; Aerodynamics*
- Paul Simon Galtsoff, Ph.D., *Senior Biologist, Fish and Wildlife Service, United States Department of the Interior; Invertebrate Zoology*
- Fred Latimer Hadsel, Ph.D., *Office of German and Austrian Affairs, Division of German Political Affairs, United States Department of State; International Politics and Organization*
- Solomon Kullback, Ph.D., *Chief, Research and Development Division, United States Department of Defense; Statistics: Multivariate Analysis*
- Ross Clayton MacCardle, Ph.D., *Principal Cytologist, Laboratory of Pathology, National Cancer Institute; Histology*
- Ladislaus Laszlo Marton, Ph.D., *Physicist, Atomic Physics, Electronics Division, National Bureau of Standards; Electron Optics*
- Elliott Waters Montroll, Ph.D., *Research Professor, Institute for Fluid Dynamics and Mathematics; Theoretical Physics*
- John Rudolph Pellam, Ph.D., *Acting Chief, Cryogenics Section, Division of Heat and Power, National Bureau of Standards; Low Temperature Studies*
- Jacques Jacobus Polak, Ph.D., *Deputy Director, Research Department, International Monetary Fund; International Economics*
- Sanford Morris Rosenthal, M.D., *Chief, Section on Pharmacology and Toxicology, National Institute of Arthritis and Metabolic Diseases; Cardiovascular Shock*
- Waldo Lasalle Schmitt, Ph.D., *Head Curator of Zoology, United States National Museum; Invertebrate Zoology: Crustacea*
- Leonard Peter Schultz, Ph.D., *Curator of Fishes, United States National Museum; Vertebrate Zoology: Ichthyology*
- Lyman Bradford Smith, Ph.D., *Associate Curator, Division of Phanerogams, Department of Botany, Smithsonian Institution; Taxonomy*
- Alberto Vázquez, Ph.D., *Foreign Affairs Specialist, Division of Research for American Republics, Office of Intelligence Research, United States Department of State; Latin American Literature*
- Erwin Paul Vollmer, Ph.D., *Research Physiologist, Naval Medical Research Institute; Endocrinology*
- Henry Welch, Ph.D., *Chief, Division of Penicillin Control and Immunology, United States Food and Drug Administration; Antibiotics*
- Willard Hull Wright, D.V.M., Ph.D., *Scientist Director, United States Public Health Service; Chief, Zoology Laboratory, National Institutes of Health; Parasitology*
- Ralph Aubrey Young, M.B.A., Ph.D., *Director, Division of Research and Statistics, Board of Governors, Federal Reserve System; International Finance*

GENERAL INFORMATION**INTRODUCTORY**

The Graduate Council offers a program of advanced study and research leading only to the degree of Doctor of Philosophy. It was established in 1930 to replace the Graduate School which had formerly administered work for the Master's as well as the Doctor's degrees. The Graduate Council provides a doctoral discipline which moves freely across administrative lines dividing departments of instruction or fields of study. It gives personal supervision to a limited number of students, each of whom has his own consultative committee, examinations, and research direction.

FIELDS OF RESEARCH

The following fields of research have been authorized by the Graduate Council as those in which doctoral investigations and dissertations may be undertaken. The supporting fields of study required of all candidates for the degree of Doctor of Philosophy are specified for each individual student by his Consultative Committee before admission to study under the Council.

This list of fields is subject to such changes as the educational resources of the University may direct. The prospective student may address preliminary inquiries concerning his research interests to the member of the Council who is in charge of the field, or to the Chairman of the Graduate Council.

Anatomy

- (1) Gross Anatomy; (2) Histology
Histology

Telford
MacCardle

Bacteriology

- Antibiotics
Bacterial Physiology and Nutrition
(1) Intestinal Microbiology; (2) Immunity in Tuberculosis; (3)
Problems in Medical Bacteriology with especial reference to
Diagnostic Methods and Immunization
(1) Intestinal Microbiology; (2) Immunology: Antigenic Analysis
Virology

Welch
Ajl
Parr

Griffin
Robbins

Biochemistry

- Animal Nutrition
(1) Carbohydrate Metabolism; (2) Nutrition (emphasis on
vitamins); (3) Pathological Chemistry
Lipids
Tissue Respiration

Briggs
Roe
Treadwell
Burk

Biology

Cytology

Bowman

Botany

(1) Mycology; (2) Plant Pathology

Diehl

Plant Physiology

Yocum

Plant Physiology

Borthwick

Taxonomy

Smith

Chemistry

Inorganic

Naeser

Organic

Wrenn

Physical: Kinetics and Electrochemistry

Wood

Physical: Solubilities

Van Evera

Physical-Organic: Reaction Mechanisms

Sager

Economics

(1) Economic Fluctuations; (2) History of Economic Thought

Burns

(1) Economic Theory; (2) Economic Planning

Watson

International Economics

Polak

International Finance

Young

(1) National Income; (2) Public Finance

Colm

Transportation

Kennedy

History

European: (1) Diplomatic since 1815; (2) The Modern Near East

Davison

European: Nationalism

Kayser

Latin American History

Davis

United States: (1) Diplomatic; (2) Political

Merriman

United States: (1) Social; (2) Economic

Gray

Law

Jurisprudence

Collier

Literatures and Languages

American: Literary Nationalism

Bolwell

English: Eighteenth Century Drama

Stone

English: (1) Sixteenth Century Drama; (2) Seventeenth Century

Tupper

Drama

Romance: Latin American Literature

Vazquez

Romance: Modern Spanish Literature

Alonso

Romance: (1) Romance Linguistics; (2) Old and Middle French;

Doyle

(3) Old Spanish

Romance: Seventeenth Century Literature

Protzman

Romance: (1) Sixteenth Century French Literature; (2) Modern

Keating

French Literature

Mathematics

Algebra: Finite Groups

Johnston

Analysis: Infinite Series

Mears

Geometry: Differential Geometry

Taylor

Pharmacology

- (1) Chemotherapy; (2) Drug Metabolism
 (1) Drug Metabolism; (2) Medicinal Chemistry

Smith
Mandel

Physics

- Electron Optics
 Experimental: Electronics
 Experimental: Electronics
 Low Temperature Studies
 Low Temperature Studies
 Theoretical: Aerodynamics
 Theoretical: (1) Relativity; (2) Nuclear; (3) Astrophysics
 Theoretical: The Solid State

Marton
Brown
Bay
Cheney
Pellam
Frenkiel
Gamow
Montroll

Physiology

- (1) Blood Pressure Studies; (2) Neuro-Muscular Studies
 Cardiovascular Shock
 Endocrinology
 (1) Nutrition and Endocrines; (2) Cardiovascular System

Leese
Rosenthal
Vollmer
Albritton

Political Science

- International: Comparative Government and Political Theory
 International: International Politics and Organization
 International: The Far East
 International Law: (1) War and Neutrality; (2) Arbitration
 United States: (1) The Legislative Process; (2) Governmental
 Organization and Administration

Kraus
Hadsel
Ballantine
Brewer
West

Psychiatry

- Problems of Treatment (M.D. degree required for admission)

Overholser

Psychology

- Counseling and Guidance
 Experimental Psychology
 Military Counseling and Guidance
 Personnel Psychology
 (1) Psychological Measurements; (2) Abnormal Psychology
 Social Psychology

Dreese
Fox
Fisher
Moser
Hunt
Tuttliff

Statistics

- Multivariate Analysis
 (1) Theoretical: Probability and Sampling; (2) Applied: Econ-
 ometrics

Kullback
Wells

Zoology

- Entomology: Insect Physiology
 Invertebrate: Crustacea
 Invertebrate: Molluscan Morphology and Physiology
 Parasitology: Parasitic Protozoa
 Vertebrate: Embryology and Morphogenesis
 Vertebrate: Ichthyology

Murphy
Schmitt
Gardner
Wright
Hansen
Schultz

ADMISSION PROCEDURE

For admission the student must possess adequate preparation for advanced study, including satisfactory Bachelor's and Master's degrees, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Previous graduate study should have been in the same general field as that proposed for doctoral study.

Before applying, the student should have personal interviews with the Chairman of the Council and the professor in charge of the central field of study.

After application blank and transcripts of previous academic training have been filed the student must demonstrate his ability to read either French or German in the field of his major interest. Both French and German are required without exception, but only one at the time of admission. The student then meets his personal admission committee which makes its recommendations to the Council. The committee may specify additional prerequisites for the student's doctoral program.

STUDY FOR THE COUNCIL FELLOWSHIP EXAMINATION

The discipline for the degree is divided into two stages. The first is made up of study in related fields of learning which support the general area of research concentration, culminating in the Council Fellowship Examination. The second stage is composed of research and investigation of a particular project in a special field and the presentation of such research in a written dissertation, culminating in the Final Examination.

At the beginning of the student's program of study leading to the Council Fellowship Examination, a consultative committee is assigned to direct his work in a group of fields of learning, usually five or six in number, deemed necessary to insure his breadth of knowledge and general competence for continuing independent research, as well as to support the dissertation project in his central field. Members of the consultative committee will advise the student concerning the scope and content of these supporting fields, and will assist the student in preparation for his examination in them.

This advanced study may be done by attending graduate courses of instruction and seminars, by conference with members of the student's committee, and by independent means. The examination, however, not credits or grades for work done in courses, is the sole test of the student's ability to enter upon the second phase of his doctoral discipline. The examination is a series of written tests usually extending over a period of one week. The major portion of a day is given to each part of the examination covering one of the fields of study on the student's program. If the results of the examination are satisfactory the student is admitted as a Fellow of the Graduate Council, to pursue his special-

ized study and research under the supervision of a member of the Council.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

After the student has been inducted as a Fellow of the Council and his research program has been arranged, he is responsible only to the member of the Council who directs his research project. As a Fellow, he may attend general meetings of the Council and participate in the programs of research discussion, and enjoy unrestricted use of all the academic facilities of the University. When necessary, the Graduate Council makes provision for sending the Fellow to some other institution, library, or laboratory for special study in connection with his doctoral investigation.

The doctoral dissertation is required of all Fellows as evidence of ability to perform scholarly research and to interpret its results. An extended summary of the dissertation is published in a periodical volume by the University for distribution to other institutions and libraries. Printed copies of detailed regulations concerning the dissertation are supplied to all candidates for the doctorate.

When the completed dissertation has been approved by the member of the Council in charge of the research project, the Fellow is presented for his final examination. This examination is oral and open to the public. The committee of examiners includes not only members of the Council competent in the research field or in closely related subjects, but also at least two qualified experts from other research institutions brought to the University to participate in the examination. If the Fellow satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Council recommends him for the degree of Doctor of Philosophy.

POST-DOCTORAL STUDY

The Council expects its graduates to continue their interest in advanced study and research, and to contribute to its program. All graduates are listed as Associate Fellows and, upon request, will receive notices of all general meetings. They may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual residence fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library materials is paid by the graduate. Special arrangements for such privileges must be made with the Chairman of the Council. Post-doctoral work may not be applied toward any degree offered by the University.

REGULATIONS

Candidates and Fellows in the Graduate Council are subject to, and are expected to familiarize themselves with, the regulations regarding REGISTRATION, FEES AND FINANCES stated on pages 22-26, and the University regulations stated on pages 42-49.

RESIDENCE AND CONTINUOUS REGISTRATION

The Graduate Council expects all students to work on their doctoral programs in residence, although there is no formal regulation concerning the minimum amount of time of resident study either in preparation for the Council Fellowship Examination or as a Fellow of the Council engaged in doctoral research. The student who undertakes either part of the doctoral program on full or limited schedule must, in accordance with University regulations, maintain continuous registration under the Graduate Council even when the Council has granted a leave of absence for study or residence elsewhere. Failure to maintain registration in each term of the academic year disrupts the residence status of the student. In such case, the student must reapply for admission to the Council, under whatever new conditions and regulations are set up by his consultative committee or the member of the Council who directs his research.

TEACHING FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

A limited number of Teaching Fellowships are assigned annually to certain departments of instruction open to doctoral students registered under the Graduate Council. An announcement regarding qualifications and application for these fellowships will be sent upon request to the Office of the Graduate Council.

In many departments of instruction graduate assistants are appointed to assist in the academic program. Applicants should inquire directly of the executive officer of the department concerned regarding vacancies and details of appointment.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request to the Office of the Graduate Council.

THE SCHOOL OF MEDICINE

THE FACULTY*

Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Dean of the School of Medicine*

Thomas Martin Peery, A.B., M.D., *Director of Postgraduate Instruction*

Joseph Hiram Roe, Ph.D., *Professor of Biochemistry*

‡Walter Freeman, Ph.D., M.D., *Professor of Neurology*

Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor of Medicine*

Errett Cyril Albritton, A.B., M.D., *Fry Professor of Physiology*

Roger Morrison Choisser, B.S., M.D., *Professor of Pathology*

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology*

Winfred Overholser, A.B., M.D., Sc.D., *Professor of Psychiatry*

Frederick A. Reuter, M.D., *Professor of Urology*

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology*

Daniel Bruce Moffett, A.B., M.D., *Professor of Otolaryngology*

Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics*

John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology*

Brian Blades, A.B., M.D., *Professor of Surgery*

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery*

Chester Elwood Leese, Ph.D., *Professor of Physiology*

Thomas McPherson Brown, A.B., M.D., *Professor of Medicine*

Angus Maelvor Griffin, Ph.D., *Professor of Bacteriology*

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology*

Thomas Martin Peery, A.B., M.D., *Professor of Pathology*

William Woodrow Stanbro, M.D., *Professor of Radiology*

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation*

Carlton Raymond Treadwell, Ph.D., *Professor of Biochemistry*

Charles Seymour Coakley, M.D., *Professor of Anesthesiology*

Ira Rockwood Telford, Ph.D., *Professor of Anatomy*

Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*

Radford Brown, M.D., *Clinical Professor of Obstetrics and Gynecology*

* The President of the University, the Dean of Faculties of the University, and the Registrar of the University are members of the Faculty.

‡ On leave of absence 1954-55

Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
 William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
 William Herndon Jenkins, M.D., *Clinical Professor of Otolaryngology*
 *Paul Calabrisi, A.M., *Associate Professor of Anatomy*
 Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*
 Victor Frederick Ludewig, A.B., B.S., *Superintendent of the University Hospital*

COMMITTEES‡

THE DEAN'S COUNCIL

Joseph Hiram Roe
 Brian Blades

Winfred Overholser
 John Parks

COMMITTEE ON ADMINISTRATION OF THE UNIVERSITY HOSPITAL AND
 OUTPATIENT DEPARTMENT

John Parks

Walter Andrew Bloedorn, *Chairman*

Brian Blades

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Angus MacIvor Griffin

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COMMITTEE ON CURRICULUM

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Thomas McPherson Brown

Thomas Martin Peery

Carleton Raymond Treadwell

Ira Rockwood Telford

Paul Calabrisi

Victor Frederick Ludewig

* On leave of absence 1954-55.

‡ The President of the University and the Dean of the School of Medicine are members ex officio of all committees.

COMMITTEE ON RESEARCH

Angus MacIvor Griffin, *Chairman*
 John Parks
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COMMITTEE ON HOSPITAL PRIVILEGES

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ADVISORY COMMITTEE ON POSTGRADUATE INSTRUCTION

Thomas Martin Peery, *Chairman*
 Winfred Overholser
 John Parks
 Thomas McPherson Brown
 Preston Alexander McLendon
 Brian Blades
 Clayton Bernard Ethridge

GENERAL INFORMATION

INTRODUCTORY

The School of Medicine of the George Washington University was opened in March 1825; of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 and made a part of the organization of the School.

The School is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The degrees of the School of Medicine are recognized by all state examining boards.

PURPOSE AND AIMS

The purpose of the School of Medicine is to train physicians competent in the art and science of medicine, which includes general practice, further training for special practice, teaching, research, and medical administration.

On the undergraduate level the aims of the school are (1) to select for training students of superior aptitude and character; (2) to train students thoroughly in the theoretical principles and in the laboratory and clinical applications of the biological and medical sciences; and (3) to provide a diversity of clinical experience with a wide range of clinical material, through well supervised clinical clerkships in federal, public, and private hospitals providing facilities for all specialized fields of medicine.

The aims of the School of Medicine in the fields of graduate and postgraduate instruction are (1) to provide interns and residents for a number of hospitals in the Washington area for advanced training in both general and specialized practice; (2) to direct an expanding program of fundamental and applied research, integrated with teaching at the School of Medicine, and in keeping with the increasing need for medical knowledge and the growth of Washington as one of the world's great centers of medical research; and (3) to provide postgraduate instruction in the most recent advances in research and in clinical medicine.

To achieve these objectives the School of Medicine has developed the systematic plan of instruction outlined below and a balanced, comprehensive curriculum. In carrying out its program the School seeks to maintain a faculty of appropriate size and outstanding ability, to make the most effective use of the expanding University facilities, and to take full advantage of the exceptional opportunities for clinical and research training in the Washington area.

PLAN OF INSTRUCTION

The curriculum is a graded one beginning with fundamental aspects of the basic sciences and progressing gradually into the clinical teaching of the last two years. The teaching is organized systematically under the various departments of the School of Medicine as listed under *Courses of Instruction in this CATALOGUE*.

The first year student begins his program with a week of orientation, to acquaint him with the teaching programs, the buildings, the facilities, the faculty, and his fellow students. During the remainder of the first year he receives instruction in anatomy, biochemistry, and physiology, using the classroom and laboratory facilities of the School of Medicine. In order to emphasize the importance of the basic sciences, patients are

studied from time to time and the relationship of these fundamental sciences to the clinical sciences is stressed.

In the second year, having completed the preliminary study of the structure and function of the normal body, the mechanisms of disease are considered. The various bacteria and other microbiologic agents capable of producing disease are studied in the laboratory. The effects of various diseases upon the tissues of the human body are taught in pathology, serving as a basis for the understanding of disturbed structure and function. The mode of action of the various drugs and therapeutic agents is studied in the course in pharmacology as an introduction to the use of these agents in the treatment of patients. The student is taught to conduct a physical examination and to interpret and evaluate the various symptoms of disease. During the second term of this year patients are assigned to him for case study under the close supervision of his instructors. Introductory lectures in medicine, surgery, pediatrics, obstetrics and gynecology, neurology, radiology, and psychiatry are given during this period, preparing the student for his responsibility with patients in the hospital wards and clinics.

In the third year the student is assigned to the District of Columbia General Hospital for closely supervised clinical instruction. He serves as clinical clerk in the various divisions of the hospital and assists in the preparation of the clinical records and basic laboratory examinations. He learns to perform the common ward procedures and to use diagnostic and therapeutic equipment. During this period there are daily lectures and clinical demonstrations planned in an orderly fashion proceeding from simpler to more complex problems.

During the summer period following the third year the student is required to spend eight weeks in one of the various teaching facilities of the School of Medicine. This plan permits limited electives, so that the student may explore opportunities in the various specialties not ordinarily included in the medical curriculum.

In the fourth year the student spends most of his time in the study of ambulatory patients. This instruction is given in the clinics of the University Hospital, Children's Hospital, Mount Alto Hospital, Walter Reed General Hospital, and St. Elizabeths. In these various institutions members of the faculty continue to supervise the students in their evaluation of clinical problems by a careful review of each patient and joint planning of treatment procedures. Stress is placed upon the total individual and his environment, since it is recognized that many factors, emotional and economic as well as physical, contribute to disease and must be considered if the individual is to be restored to health and effectiveness. Instruction in the basic sciences is continued in the fourth year in special conferences in which representatives of several departments of instruction participate.

By the completion of his four-year course the student must have demonstrated that he has acquired the basic knowledge and experience necessary for advanced training in the internship.

EQUIPMENT AND FACILITIES

The George Washington University Hospital.—The hospital, with a capacity of 400 beds, was opened in 1948. This splendid edifice, which is one of the outstanding hospitals in the United States, is completely furnished with the latest and most scientific apparatus and equipment. Its purpose is to supplement existing hospital resources in the District of Columbia for the care of the sick and the injured; the education of physicians, nurses, and technicians; and the advancement of medical knowledge.

The hospital is staffed and controlled by the Faculty of the George Washington University School of Medicine and it provides excellent clinical material for the instruction of medical students. Virtually every specialty in the fields of medicine and surgery has assigned space and equipment in both the outpatient department and the bed-patient section of this modern institution.

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; bacteriology, hygiene, and preventive medicine; biochemistry; pathology; and pharmacology and physiology. They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Medical Library.—The Medical Library contains a selected reference collection of more than 10,000 volumes, currently obtains important new medical works, and regularly receives the principal medical journals.

Inter-library loan service is maintained by close cooperation with other medical and scientific libraries throughout Washington and vicinity.

The Medical Library is open from 9:00 A.M. to 9:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 1:00 P.M. Saturday.

The Medical Library maintains a branch in Room 6037-A of the University Hospital for reference, research, and inter-library loan service. It is open from 2:00 to 6:00 P.M. Monday through Friday.

GOVERNMENT LIBRARIES AND MUSEUMS

The Library of the Surgeon General's Office of the United States Army is the most complete general medical library in the world. In addition to its great collection of medical works, all leading medical periodicals of the world are available. This Library, as well as the

Library of Congress, the Public Library, and the many excellent libraries of the various government departments, is available to students and teachers through a service maintained by the Medical School Library.

The Army Institute of Pathology affords opportunity for studying the conditions met in military and general medicine and surgery. Its collection of anatomical and pathological specimens is unequalled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the Department of Agriculture all afford opportunities for study in Medicine and its allied sciences.

CLINICS

The City of Washington, with about a million inhabitants, provides ample clinical material. The University Hospital and Outpatient Department furnish clinical facilities and a large proportion of the materials studied in the courses in pathology and clinical pathology.

The University Hospital.—All clinics are under the supervision of the Dean, who is also Medical Director of the Hospital. This insures the highest possible utilization of available clinical material for teaching purposes and the proper supervision of clinicians and students; it brings the individual student into direct contact with patients and requires him to do, under authoritative supervision, the clinical and laboratory work necessary for diagnosis and treatment; and it permits proper interpretation of the conditions occurring during the progress of cases and promotes the keeping of adequate records. Clinical and clinico-pathological conferences are held in which the history of cases, the physical findings, laboratory records, and the post-mortem pathology when available, are presented and correlated.

The Outpatient Department.—The Outpatient Department has clinical facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for clinical instruction in the Outpatient Department.

The George Washington University Cancer Clinic.—This modern building, opened in 1954, houses the Cancer Detection Clinic; the Helen L. and Mary E. Warwick Memorial; and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are available to medical students. In addition the diagnosis and treatment of various forms of neoplasms are presented. The results of the treatment of neoplasms are evaluated by follow-up studies.

The Helen L. and Mary E. Warwick Memorial, for cancer and allied diseases, was affiliated with The George Washington University in July 1948. The purposes of this clinic are (1) to provide care for cancer patients, through group consultations within a cancer organization, and

(2) to provide training for students and physicians in the field of oncology.

The District of Columbia General Hospital.—Clinical instruction is available in all branches of medicine. A great wealth of clinical material is afforded in this hospital and by ordinance of the municipal authorities of the District of Columbia, members of the Faculty of this School of Medicine, who are nominated by this University, are assigned approximately one-third of the patients for treatment and clinical study. Third-year students serve their clinical clerkships and fourth-year students are assigned for instruction in the specialties at this institution.

Children's Hospital.—Clinical instruction in pediatrics, dermatology, and orthopedic surgery.

St. Elizabeths Hospital.—Clinical instruction in mental and nervous diseases, medicine, post-mortem work, and gross pathology. This hospital with 6,800 beds, is maintained by the United States Government. The psychiatric clinic is one of the largest in the world.

Mt. Alto Hospital.—Clinical instruction in medicine and surgery is available and fourth-year students are assigned in rotation by section for clinical clerkships.

Walter Reed General Hospital.—Clinical instruction is available in surgery. Fourth-year students are assigned in rotation by section for clinical instruction.

ADMISSION, REGISTRATION, FEES AND FINANCIAL REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the regulations stated on pages 12-26.

Registration in the School of Medicine is for a period of one academic year. After the student has entered the courses of instruction he is obligated for the full tuition for the academic year. No part of the tuition will be refunded upon withdrawal or dismissal for any cause. Acceptance by the School of a student's fees does not in any way obligate the School to accept the student for any subsequent year, and the right is reserved to drop any student from the School whenever, in the interest of a student or the School, the Faculty deems it advisable to do so.

A fee of \$5 to defray the costs of completing the records for final consideration for admission must accompany each application. This fee applies to students whose premedical training was completed at this University as well as to students who have not previously attended this University. Fees for each term are \$425, payable in advance.

Because the number of applicants far exceeds the limit of each class, places can be reserved only for those qualified applicants who remit a

deposit of \$100 which will be credited toward the tuition of the first term. Under no circumstances will this deposit be refunded.

Credit for work will not be given until, at the completion of a laboratory course, the student has replaced or paid for all articles of equipment or other University property which he has lost, broken, or destroyed. All breakage or loss not directly traceable to an individual student is assessed pro rata.

COST OF TEXTBOOKS AND STUDENT EQUIPMENT

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, \$400; second year, \$250; third year, \$125; fourth year, \$80; total, \$855.

A fee of \$1 a term is charged for the use (optional) of a locker.

REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the general University regulations stated on pages 42-49.

ABSENCE

Absence consists in being away from a class or clinic during a scheduled period, entering after the class or clinic has begun, or leaving before either is dismissed.

Excuse for absence due to sickness must be accompanied by a certificate signed by the attending physician and must be filed in the Office of the Dean.

For every unexcused absence a department will deduct one-half of one per cent from the student's final grade in the subject involved.

GRADES

The following grading system is used: *A* (90-100); *B* (80-89); *C* (75-79); *D* (65-74) condition; *E* (below 65) failure; *Inc.*, incomplete. The passing grade in each subject is *C*.

A student who is conditioned in any subject will not be advanced until such condition is removed and then only by authority of the Committee on Scholarship.

EXAMINATIONS

Examinations, which may be written, oral, or practical, will be held at the end of each term.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations, except that students from those states and foreign countries which do not recognize the National Board may be exempted from Part II by action of the Committee on Scholarship.

PHYSICAL EXAMINATIONS

All first-year students are given a comprehensive physical examination upon admission to the School of Medicine. The students are informed of the findings and advised regarding such measures as will tend to maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School has maintained since 1938-39. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylactics exist.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, of reputable character, and free of all indebtedness to the University. He must have satisfied the admission requirements, completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

COMBINED ARTS AND MEDICINE CURRICULUM

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least ninety credit hours of prescribed college work (at least thirty credit hours and one year of residence must be completed in Columbian College, the senior liberal arts college), and the first year of the medical curriculum. Upon satisfactory completion of

the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

HONORS

A candidate who has completed the four-year medical course with an average grade of *A* may be recommended for graduation "with distinction."

INTERN AND RESIDENT TRAINING PROGRAM

The George Washington University Hospital offers rotating-type internships as classified by the Interassociation Committee on Internships. Twenty-four internships of one year each are offered; thirteen in the Department of Medicine with emphasis on medicine, ten in the Department of Surgery with emphasis on surgery, and one in the Department of Pathology with emphasis on pathology.

Rotating Internships, Emphasis on Medicine.—Interns will be assigned to seven months of general medicine, two months on the surgical service, and one month each on neuro-psychiatry, pediatrics, and obstetrics and gynecology.

Rotating Internships, Emphasis on Surgery.—Interns will be assigned to the surgical service for nine months, to general medicine for two months, and to obstetrics and gynecology for one month.

Rotating Internships, Emphasis on Pathology.—Interns will be assigned to the pathology service for eight months, to general medicine for two months, and to surgery for two months.

A total of approximately forty-two approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, oral surgery, pathology, physical medicine, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are of from one to four years depending upon the service. Appointments are for one year subject to renewal. In several of the fields there are affiliations with local voluntary and government hospitals.

Fellowships of one or two years are available to acceptable candidates in anesthesiology, cardiology, chest diseases, infectious diseases, outpatient service, physical medicine, rheumatic diseases, surgery and thoracic surgery.

For application blanks and further information, address the Superintendent, The George Washington University Hospital, Washington 7, D. C.

POSTGRADUATE INSTRUCTION

The School of Medicine offers annually a series of short intensive postgraduate courses, varying somewhat from year to year. The series is designed for physicians in practice. The significant advances in the various specialties are presented, together with summaries of older information.

The Kellogg Medical Lectures, inaugurated in 1948, are a series of evening lectures and clinics, presented by distinguished physicians from other cities, designed primarily for physicians practicing in Washington and the vicinity. They are also attended by the Faculty, postgraduate students, and members of the senior class of the School of Medicine.

During the academic year 1953-54 approximately 168 physicians were enrolled in postgraduate courses. For application blanks and further information, address the Director of Postgraduate Instruction, The George Washington University Hospital, Washington 7, D. C.

MEDICAL TECHNOLOGIST COURSE

The course for medical technologists consists of twelve consecutive months of didactic and practical work in all phases of clinical laboratory technique. The course meets the full requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. Prerequisites are 60 credit hours (two academic years) of college work including required credits in biology and chemistry.

Two classes are accepted each year one entering in September and the other in March. Enrollment in each class is strictly limited so that personal instruction can be given.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the certifying examination given by the Registry of Medical Technologists.

For application blanks and further information, address the Director of Laboratories, The George Washington University Hospital, Washington 7, D. C.

THE LAW SCHOOL

THE FACULTY AND STAFF OF INSTRUCTION*

John Theodore Fey, LL.B., M.B.A., J.S.D., *Dean of the Law School*
 Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
 Louis Harkey Mayo, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
 David Benson Weaver, A.B., LL.B., *Director of Continuing Legal Education*

Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
 William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
 Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor of Law*
 James Forrester Davison, A.B., LL.B., LL.M., S.J.D., *Professor of Law*
 ‡James Oliver Murdock, Ph.B., LL.B., *Professor of Law*
 Oswald Symister Colclough, B.S., LL.B., LL.D., *Professor of Law*
 John Theodore Fey, LL.B., M.B.A., J.S.D., *Professor of Law*
 James Ward Morris, A.B., *Adjunct Professor of Law*
 James Robert Kirkland, A.B., LL.B., LL.M., *Adjunct Professor of Law*
 Bolitha James Laws, LL.B., LL.M., LL.D., *Adjunct Professor of Law*
 Conder Caywood Henry, A.B., LL.B., *Adjunct Professor of Law*
 John Wingfield Jackson, B. S., LL.B., *Adjunct Professor of Law*
 Frank Hammett Myers, LL.B., LL.M., *Adjunct Professor of Law*
 John Albert McIntire, A.B., LL.B., *Professorial Lecturer in Law*
 Justin Lincoln Edgerton, A.B., LL.B., *Professorial Lecturer in Law*
 Philip Field Herrick, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
 George Edward Monk, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
 Charles Sylvanus Rhyne, LL.B., *Professorial Lecturer in Law*
 Frederick Bernays Wiener, Ph.B., LL.B., *Professorial Lecturer in Law*
 Robert McKinney Cooper, Ph.M., J.D., *Associate Professor of Law*
 Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., *Associate Professor of Law*
 John Patrick Burke, A.B., LL.B., *Associate Professor of Law*
 Herman Israel Orentlicher, A.B., LL.B., *Associate Professor of Law*
 David Benson Weaver, A.B., LL.B., *Associate Professor of Law*

* The President of the University, the Dean of Faculties of the University, the Dean and Assistant Deans of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.

‡ On sabbatical leave fall term 1954-55.

Louis Harkey Mayo, B.S., LL.B., J.S.D., *Associate Professor of Law*
 Glen Earl Weston, B.S., LL.B., *Associate Professor of Law*
 Joseph Patrick Driscoll, A.B., LL.B., *Associate Professor of Law*
 William Thomas Mallison, Jr., A.B., LL.B., *Assistant Professor of Law*
 John Joseph Czyzak, A.M., LL.B., *Lecturer in Law*
 Joseph Dach, LL.D., LL.B., *Lecturer in Law*
 Milton Paul Kroll, A.B., LL.B., *Lecturer in Law*
 Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Lecturer in Law*
 Charles James Zinn, A.B., LL.B., LL.M., *Lecturer in Law*
 Eugene William Geniesse, B.S.E., M.S., LL.B., *Lecturer in Law*
 Frazer Frost Hilder, A.B., J.D., *Lecturer in Law*
 John Alexander Kendrick, A.B., LL.B., *Clerk of the Trial Practice Court*
 Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

COMMITTEES*

THE DEAN'S COUNCIL

Carville Dickinson Benson	James Forrester Davison
Charles Sager Collier	William Thomas Fryer
Robert McKinney Cooper	Leroy Sorenson Merrifield
James Oliver Murdock	

COMMITTEE ON ADMISSIONS

Louis Harkey Mayo	Carville Dickinson Benson, <i>Chairman</i>	Harold Griffith Sutton
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COMMITTEE ON GRADUATE STUDIES

Charles Sager Collier	James Forrester Davison, <i>Chairman</i>	James Oliver Murdock
	Robert McKinney Cooper	

COMMITTEE ON SCHOLARSHIP

Carville Dickinson Benson	Herman Israel Orentlicher, <i>Chairman</i>	Louis Harkey Mayo
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COMMITTEE ON CURRICULUM

Herman Israel Orentlicher	Leroy Sorenson Merrifield, <i>Chairman</i>	Roger Allen Cunningham
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*The President of the University, the Dean of Faculties of the University, and the Dean and Assistant Deans of the Law School are members ex officio of all committees.

LIBRARY COMMITTEE

James Oliver Murdock, *Chairman*
David Benson Weaver

Glen Earl Weston

GENERAL INFORMATION

INTRODUCTORY

LOCATION IN THE NATION'S CAPITAL

The George Washington University Law School, now in its 80th year, is the oldest law school in the District of Columbia. The School took part as a charter member in 1900 in the organization of the Association of American Law Schools and it has been an active member of the Association since that time. It is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. The years of residence at law school are years of participation in the life of the community, which, in the case of the George Washington University Law School, is the government of the United States by law. As a consequence, the study of law takes on added meaning, whether the goal be government service or private practice, general or specialized.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School offers: (1) a program of study in preparation for the practice of law; (2) programs of study and research on the graduate level for foreign as well as for American students; (3) a continuing legal education program for members of the bar; (4) institutes and forums on current topics in domestic and foreign law; (5) the publication of a law journal containing the results of research in public law; and (6) encouragement of student professional curricular activities.

PROGRAMS OF STUDY

Traditionally the Law School has been national in the geographic distribution of its students. At the present time, men and women holding baccalaureate degrees from more than three hundred colleges and universities come from the forty-eight states, the territories, and several foreign countries to comprise the student body. As a consequence the programs of study leading to the degrees of Bachelor of Laws and Juris Doctor have been planned to provide instruction and training for the practice of law wherever the Anglo-American legal system obtains.

Graduate work leading to the degrees of Master of Laws and Doctor of Juridical Science is offered for those desiring further study and research in specialized fields of law.

Provision is made for advanced study by members of the bar who do not desire to register as candidates for degrees. Lawyers may take courses for this purpose either as unclassified students or as continuing legal education students.

Graduate work is offered also to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. There are two programs of study, one leading to the degree of Master of Comparative Law for the lawyers planning to return to their own countries, and the other leading to the degree of Master of Comparative Law (American Practice) for lawyers planning to remain in this country for the practice of law.

FALL, SPRING, AND SUMMER TERMS

There are three terms: fall, spring, and summer. Students may enter the Law School at the beginning of any of the three terms. The academic year consists of the fall and spring terms.

MORNING AND EVENING DIVISIONS

The School maintains morning and evening divisions. The evening division conforms to the same standards as the morning division, including the same teaching staff.

HOURS OF INSTRUCTION

Morning sections: Monday through Friday, 9:10 A.M. to 1:00 P.M.
Trial Practice Court: Saturday, 9:30 to 11:30 A.M.

Evening sections: Monday through Friday, 5:50 to 7:40 P.M.

THE LIBRARY

The Law Library of 35,000 volumes contains the official reports of the decisions of the courts of last resort of all the states prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; leading textbooks and treatises; and practically complete sets of about 150 legal periodicals.

The Library, which is on the fourth floor of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

THE LAW REVIEW

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of Faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The *Review* organization includes a faculty editor-in-chief, an associate faculty editor, a faculty board of advisory editors, a board of departmental advisory editors, and a board of student editors. The student editors are chosen each year on the basis of scholarship.

THE STUDENT BAR ASSOCIATION

Every student in the Law School is a member of the Student Bar Association. This is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law.

The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which

provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

REGULATIONS

Students in the Law School are subject to, and are expected to familiarize themselves with, the following regulations and the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26, and the University regulations stated on pages 42-49.

AMOUNT OF WORK

Students without substantial outside employment may take a program of studies of fourteen hours a week in which the majority of hours must be in the morning sections. Students, whether in the morning or evening division, with substantial outside employment must take a limited program of studies not exceeding ten hours a week. Students taking a majority of their classes in the evening may not take more than ten hours a week. A minimum schedule of ten hours in the morning division and six hours in the evening division is required except in exceptional circumstances when authorized by the Dean.

ATTENDANCE

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may, by action of the Faculty, be barred from taking the examination. Attendance at classes is limited to students registered to take them for credit. "Auditing" classes is not permitted.

RESIDENCE REQUIREMENTS

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the morning di-

vision for the fall and spring terms constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a morning student must attend six terms to meet residence requirements; an evening student must attend eight. Students authorized to take schedules of less than ten hours in the morning division in any particular term, or less than six hours in the evening division, receive residence credit on a proportional basis. Students who attend the summer term receive fractional residence credit.

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

A student admitted with advanced standing must complete one academic year of residence and pass twenty-eight credit hours with an average of at least *C* in order to qualify for the degree of Bachelor of Laws.

EXAMINATIONS

Written examinations are held at the end of each course. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. A grade of *NG* (no grade) will be entered on the record of a student thus excused, and he may take the next regularly scheduled examination in the course for which the excuse has been granted.

No special examinations will be given; except that, upon written application to the Dean, showing sufficient cause, a candidate for a degree at a convocation before the next regular examination, if he would be entitled to take a postponed examination, may, at the discretion of the Faculty, be given a special examination.

If a student fails to take an examination, a grade of *F* (to be counted as zero) will be recorded unless the student has obtained the Dean's permission to drop the course according to regulations stated on pages 42 and 43 or to be excused from the examination.

GRADES

Grades are indicated by the letters *A*, excellent, 85-100; *B*, good, 75-84; *C*, satisfactory, 65-74; *D*, poor, 55-64—below standard for graduation; *F*, failed—below 55; and *NG*, no grade—student excused from failure to take regularly scheduled examination. See "Examina-

tions" above, for grade upon failure to take an examination. The grades *A*, *B*, *C*, and *D* mean that the work has been completed and credit given for the courses. *F*, failed, means that no credit will be given. To obtain credit the student must repeat the course; but a student who has obtained an average of *C* in the work of the term just completed and the preceding term and received a grade of *F* in only one course during those terms may take the next regular examination in that course, or a special examination at the end of the next term if he is a candidate for a degree at a convocation before the next regular examination. If on such reexamination he receives a passing grade he will be given credit in the course. Both grades are recorded.

EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student who in one term, or two successive terms, fails in courses aggregating eight or more credit hours will be excluded, except that if currently registered he will be permitted to complete the work of the term. Such a student is not eligible thereafter to be registered in the Law School or to attend classes. While excluded he may, however, with the consent of the Faculty, be admitted to the next regular examinations in those courses in which he has made a grade below passing, and if he receives a grade of passing in those courses with an average sufficient to make his cumulative average not less than *C*, he will be reinstated.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least *C*, will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second term following that in which his average has fallen below *C*, receive grades sufficient to give him a cumulative average of at least *C*, he will be excluded, except that if currently registered he will be permitted to complete the work of the term.

The cumulative average of a student includes all the grades in all the courses taken while he is in the Law School as a candidate for a particular degree. When a course is repeated or a reexamination is taken, both the first grade and the subsequent grade or grades are counted in the cumulative average.

In special cases in which a student who has been excluded can clearly demonstrate that he has the capacity to pursue the study of law with a definite likelihood of success, his low grades being due to special circumstances beyond his control, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the grad-

Morning Division**FIRST YEAR**

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Legal Method and Legal System..	4	Real Property	4
Contracts	4	Contracts	3
Personal Property	2	Torts I	4
Criminal Law and Procedure....	4	Constitutional Law	4
Total	14	Total	14

SECOND YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Civil Procedure	4	Evidence	4
Conveyances and Wills	2	Conveyances and Wills (concluded)	3
Electives	8	Electives	8
Total	14	Total	14

THIRD YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Trial Practice Court	2	Trial Practice Court	3
Electives	10	Electives	10
Total	12	Total	12

Evening Division**FIRST YEAR**

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Legal Method and Legal System..	4	Torts	4
Contracts	4	Contracts	3
Personal Property	2	Criminal Law and Procedure....	4
Total	10	Total	10

SECOND YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Real Property	4	Constitutional Law	4
Civil Procedure	4	Evidence	4
Conveyances and Wills	2	Conveyances and Wills (concluded)	3
Total	10	Total	10

THIRD YEAR

FALL TERM		CREDIT HOURS		SPRING TERM		CREDIT HOURS	
Electives	.....	10		Electives	.....	10	
Total	.....	10		Total	.....	10	

FOURTH YEAR

FALL TERM		CREDIT HOURS		SPRING TERM		CREDIT HOURS	
Trial Practice Court	.....	2		Trial Practice Court	.....	2	
Electives	.....	8		Electives	.....	8	
Total	.....	10		Total	.....	10	

GRADUATE PROGRAM

DEGREES OF MASTER OF LAWS AND DOCTOR OF JURIDICAL SCIENCE

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study in order to broaden and deepen their understanding of the law. Others desire to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, is therefore offered to enable qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as morning students in order that lawyers in private practice and in government service may engage in advanced study or in original research.

PROGRAMS OF STUDY FOR FOREIGN LAWYERS

Two programs of study are provided to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. For such lawyers, whose aim is to acquire an understanding of our system so that they may work intelligently with its materials and practitioners after returning to their own countries, there is available the degree of Master of Comparative Law. For foreign lawyers, however, who wish to remain in this country to practice law, there is available the degree of Master of Comparative Law (American Practice) with an appropriate program of study. With respect to both programs, the students are not assigned to special classes but work in association with

the other students in the regular courses, each student's program being adapted to his individual needs.

NON-DEGREE STUDY: CONTINUING LEGAL EDUCATION

As a result of changes and expansion in various fields of the law many lawyers pursue graduate study in order to keep abreast of current developments. Consequently, an important part of the graduate program is to provide for members of the bar not desirous of becoming degree candidates. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as continuing legal education students.

RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party, and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for the graduate degrees in the Law School and specially qualified seniors may pursue this work.

REQUIREMENTS FOR THE DEGREES

Master of Laws

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two terms. Such residence should normally be continuous. All requirements for the degree must be completed in this Law School and in a period not exceeding two years after registration for work for the degree. The student must have completed with a minimum average of *B* twenty credit hours in courses listed in the law curriculum as graduate courses except that in appropriate cases third-year courses may be approved for inclusion in the program of study if not previously taken.

Master of Comparative Law

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recom-

mended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily twenty-four credit hours in approved courses in the curriculum of the Law School or of such other departments of the University as the Faculty of the Law School shall approve.

Master of Comparative Law (American Practice)

The degree of Master of Comparative Law, American Practice (M. Comp.L.(Am.Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed twenty-eight credit hours in approved courses in the curriculum of the Law School with a cumulative average of at least C.

Doctor of Juridical Science

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Committee on Graduate Studies. At the conclusion of his first year of residence, or at such other time as the Committee on Graduate Studies may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination shall be conducted by the consultative committee and such other members of the Faculty and qualified experts from other research institutions as may be selected by the Committee on Graduate Studies.

Not later than the date specified in the University calendar the candidate must submit to the Dean one typewritten original and two legible and complete carbon copies of his dissertation in its final form. The dissertation must contain a summary of from 2,500 to 3,000 words inserted as an appendix. An additional original typewritten copy of this summary must be submitted for publication. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Chairman of the Committee on Graduate Studies.

The summaries of accepted dissertations will be printed in a volume forming a number of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE SCHOOL OF ENGINEERING

THE FACULTY AND STAFF OF INSTRUCTION*

Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
Norman Bruce Ames, M.S., E.E., LL.B., *Professor of Electrical Engineering*

‡James Henry Taylor, Ph.D., *Professor of Mathematics*
Frank Mark Weida, Ph.D., *Professor of Statistics*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Benjamin Carpenter Cruickshanks, B.S., in M.E., *Professor of Mechanical Engineering*

§Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Carl Hugo Walther, B.E., M.C.E., *Professor of Civil Engineering*
||Bruce Douglas Greenshields, C.E., Ph.D., *Professor of Civil Engineering*

Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Professor of Civil Engineering*

Forest Klaire Harris, Ph.D., *Professorial Lecturer in Electrical Engineering*

Waldo Edward Smith, B.E. in C.E., M.S. in C.E., *Professorial Lecturer in Civil Engineering*

Victor Szebehely, Dr.Eng., *Professorial Lecturer in Mechanical Engineering*

Robert Gay Trumbull, B.S. in C.E., *Associate Professor of Mechanical Engineering*

‡Wolfram Karl Legner, Ph.D., *Associate Professor of German*
Raymond Pugh Eyman, C.E., *Associate Professor of Civil Engineering*

¶Averett Howard, A.M., *Associate Professor of English Composition*
Charles Edward Greeley, B.S. in M.E., *Associate Professor of Mechanical Engineering*

Haaren Albert Miklofsky, B.C.E., M.Eng., D.Eng., *Associate Professor of Civil Engineering*

John Kaye, M.S. in M.E., *Associate Professor of Mechanical Engineering*

* The President of the University, the Dean of Faculties of the University, the Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Associate Professors, and Assistant Professors constitute the Faculty.

‡ On sabbatical leave spring term 1954-55.

¶ Professional Lecturer while on leave as Professor 1954-55.

|| On leave of absence fall term 1954-55.

|| On sabbatical leave fall term 1954-55.

- Donald Joseph Hanrahan, B.E.E., *Assistant Professor of Electrical Engineering*
 Ralph Edward Fuhrman, B.S. in C.E., M.S. in Eng., *Lecturer in Civil Engineering*
 Dwight Edward Shytle, *Lecturer in Electrical Engineering*
 Benjamin Franklin Slingsluff, B.S. in E.E., *Lecturer in Electrical Engineering*
 Harold Valdemar Oerting, B.S. in E.E., *Lecturer in Electrical Engineering*
 George Pida, B.E.E., *Lecturer in Electrical Engineering*
 Kermit Milton Lovewell, B.S. in E.E., *Lecturer in Electrical Engineering*
 William Herbert Gossard, A.B., M.S. in E.E., *Lecturer in Electrical Engineering*
 George Abraham, M.S., *Lecturer in Electrical Engineering*
 Garrett Carper Tewinkel, B.S. in M.E., M.C.E., *Lecturer in Civil Engineering*
 William Walter Balwanz, B.E.E., M.S. in E.E., *Lecturer in Electrical Engineering*
 Vincent Harry Hennessy, B.C.E., *Lecturer in Civil Engineering*
 Edward French Davis, M.S., *Associate in Mechanical Engineering*
 Alvin Hanson Morgan, B.E.E., *Lecturer in Electrical Engineering*
 Richard Henry Welles, B.C.E., *Lecturer in Civil Engineering*
 Demetrios Aremitos Polychrome, A.B., M.S. in Eng., Sc.D., *Lecturer in Civil Engineering*

COMMITTEES*

THE DEAN'S COUNCIL†

1955

James Henry Taylor
 Frank Mark Weida

1957

Norman Bruce Ames
 Bruce Douglas Greenshields

1956
 Carl Hugo Walther
 Charles Edward Greeley

COMMITTEE ON ADMISSIONS AND ADVANCED STANDING

Benjamin Carpenter Cruickshanks
 Norman Bruce Ames, *Chairman*
 Haaren Albert Miklofsky

* The President of the University and the Dean of the School of Engineering are members ex officio of all committees.
 † Elected by the Faculty.

COMMITTEE ON SCHOLARSHIP*The Dean of the School, Chairman*

Thomas Benjamin Brown
 Benjamin Carpenter Cruickshanks
 Haaren Albert Miklofsky

James Henry Taylor
 Carl Hugo Walther
 John Kaye

GRADUATE ADVISORY COMMITTEE*Martin Alexander Mason, Chairman*

Thomas Benjamin Brown
 James Henry Taylor
 Forest Klaire Harris

Haaren Albert Miklofsky
 Norman Bruce Ames
 Carl Hugo Walther

John Kaye

GENERAL INFORMATION**INTRODUCTORY**

The School of Engineering was organized in 1884 as the Corcoran Scientific School. In 1903 that school was combined with Columbian College in the Department of Arts and Sciences. In 1905 the engineering courses were placed under an administrative organization known as the Washington College of Engineering, and in 1909 the name was changed to the College of Engineering and Mechanic Arts. In 1914 the name became the School of Engineering.

Curricula leading to the degrees of Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, and Bachelor of Electrical Engineering are accredited by the Engineers' Council for Professional Development, the recognized accrediting body of the engineering profession.

OBJECTIVE

The objective of the School of Engineering is to produce graduates who possess knowledge and understanding of the fundamental scientific principles in their fields of study; some skill in their application; and an attitude of responsibility toward society and the engineering profession.

ADVISORY SYSTEM

Every student entering the School of Engineering as a degree candidate is assigned a permanent Faculty adviser—for the purpose of guiding the educational career of the student, providing assistance in his professional development as an engineer, establishing close relations between the Fac-

ulty and the student, and furnishing counsel and advice in all phases of the academic career of the student.

Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, extra-curricular activity as part of the educational process; and assist the entering student in orientation in the engineering discipline. The adviser represents the student in all cases requiring Faculty action.

Students are required to obtain their advisers' approval of programs of study prior to registration.

A student who has not completed the course work specified for the freshman and sophomore years is required to consult his adviser when so directed by the Dean, and to follow the recommendations of his adviser in all academic matters. However, advisers may not deny a student entry into any course or activity to which he is entitled under the regulations of the School of Engineering. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, in respect to any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

REGULATIONS

Students in the School of Engineering are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26, and the University regulations stated on pages 42-49.

AMOUNT OF WORK

Eighteen credit hours, including required physical education, constitute normal full-time work. Nine credit hours constitute normal part-time work.

A full-time student who is not on probation may take ordinarily not more than nineteen credit hours. A student employed more than twenty-four hours a week, who is not on probation, may take ordinarily not more than ten credit hours. A student whose quality-point index is

3.00 or higher may be permitted by the Dean to exceed these limits by not more than two credit hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a term is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ATTENDANCE

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

CHANGES IN PROGRAM OF STUDIES

In addition to the general University regulations on pages 42-49, the following regulations apply to students in the School of Engineering:

During the seven days following the first day of classes of a term, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

During the thirty-five days following the first day of classes, courses may be dropped with the approval of the student's adviser and the Dean, and without academic penalty. Withdrawal from a course without the approval of the student's adviser entails a penalty of failure in the course.

Withdrawal from a course, without academic penalty, may be authorized by the Dean at any time upon presentation of written evidence of extenuating circumstances.

THE BACHELOR'S DEGREES

The Bachelor's degrees are: Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering.

The degree of Bachelor of Science in Engineering may be earned with any of the following options: Business Administration, Chemistry, Economics, Mathematics, Physics, or Statistics.

REQUIREMENTS FOR THE DEGREES

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 42 and 43.

In order to graduate, a student must have a quality-point index of at least 2.00 on all work taken at The George Washington University, and, in addition, a quality-point index of at least 2.00 on all work accepted for the degree in the School of Engineering.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Probation is imposed for the amount of time required to complete a minimum of twelve additional credit hours or for one term, whichever is greater. In certain circumstances the period of probation may be extended. A student on probation may not hold office or participate in the activities of any student organization or represent the School in any undergraduate competition.

Suspension.—A student who has a quality-point index below 1.00 will be suspended. A student who becomes subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship regulations are applied when a student has completed a minimum of twelve credit hours of work. Thereafter, the regulations are applied in multiples of twelve credit hours.

USE OF CORRECT ENGLISH

Any student whose use of English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean's Council. The Council may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean's Council.

The foregoing regulation is to be interpreted as applying to both written and spoken English.

RESIDENCE

One year, or thirty-six credit hours, must be completed in residence in the School of Engineering. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

CURRICULUM REQUIREMENTS

The satisfactory completion of one of the following curricula of 140 credit hours, exclusive of physical education, is required.

Variations from the prescribed curricula may be made, with the permission of the Dean's Council. A student desiring to omit a required course and substitute another must make written application to the Dean presenting satisfactory reasons for the substitution; and written approval must be obtained before registration for the course.

FRESHMAN YEAR (FOR ALL ENGINEERING CURRICULA)

	Credit Hours
Chem. 11-12	8
CE 2	2
†Engl. 1, 2	3
Math. 12	3
Math. 19	1
ME 1	2
ME 3	2
ME 4	2
Phys. Ed.	8
•Phys. 6 and 7	33
General Chemistry	6
Plane Surveying	3
English Composition	3
Analytic Geometry	1
Differential Calculus	2
Engineering Survey and Orientation	2
Mechanical Drawing	2
Descriptive Geometry	8
See page 45 for statement of requirement.	
General Physics	33
Total	140

ROTC.—Air Force ROTC students substitute Air Science 1-2 (4) for Mechanical Engineering 1 (1) and Physical Education 1-2 (2).

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)

	Credit Hours
Phys. 8	3
Phys. 55	3
Math. 20	3
Math. 103	3
General Physics	3
Physical Measurements	3
Integral Calculus	3
Calculus and Differential Equations (elective in B.S. in Eng. curriculum)	3

* The student who begins Physics with Physics 6 or 7, is subject to a qualifying examination. Credit will be given for Physics 5 if not used for entrance requirements.

† Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the Freshman English course; those who are inadequately prepared for English 1 will be assigned to English A, for which credit will be given unless it is used to satisfy entrance requirements.

The School of Engineering

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EE 9-10	Elements of Electrical Engineering	6
CE 21	Analytical Mechanics: Statics	2
CE 22	Analytical Mechanics: Dynamics	3
Speech I	Effective Speaking	3
Engl. 11	The Writing of Reports	3
ME 13-14	Mechanism	4
CE 25-26	Engineering Materials	4
Phys. Ed.	See page 45 for statement of requirement.	
Total		37

ROTC.—Air Force ROTC students substitute Air Science 51-52 (4) for Physical Education 11-12 (2) and Speech I (3).

Bachelor of Civil Engineering

JUNIOR YEAR

Credit
Hours

CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2
ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1-2	Principles of Economics	6
CE 141	Graphic Statics	3
CE 142	Bridge Stresses	3
Elective	.....	5
Total		34

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Elective (5).

SENIOR YEAR

Credit
Hours

CE 23	Higher Surveying	4
CE 164	Highway Engineering	3
CE 147-48	Structural Design	4
CE 149-50	Concrete and Masonry Construction	6
CE 151-52	Statically Indeterminate Structures	4
CE 181-82	Water Supply and Sewerage	6
CE 187-88	Engineering Contracts and Specifications	4
CE 189-90	Proseminar in Civil Engineering	2
CE 192	Soil Mechanics	3
Total		36

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Civil Engineering 187-88 (4) and Civil Engineering 189-90 (2).

Bachelor of Electrical Engineering

		Credit Hours
JUNIOR YEAR		
CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2
ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1-2	Principles of Economics	6
EE 105-6	Direct-Current Laboratory	4
EE 107	Alternating-Current Circuits	3
EE 108	Alternating-Current Machinery	3
Elective	.....	3
Total		36

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Economics 2 (3) and Elective (3).

		Credit Hours
SENIOR YEAR		
1. Communications Option		
EE 115, 116	Advanced Network Theory	4
EE 123, 124	Advanced Network Laboratory	3
Phys. 133	Electronic Circuits	3
EE 148	Applications of Electronic Devices	4
EE 111-12	Electrical Measurements	1
EE 109	Alternating-Current Machinery	2
EE 150	Electronic Devices Laboratory	4
EE 133-34	Alternating-Current Laboratory	2
EE 189-90	Proseminar in Electrical Engineering	1
Elective	.....	1
Total		34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Electrical Engineering 189-90 (2) and Elective (3).

		Credit Hours
2. Power Option		
EE 109	Alternating-Current Machinery	3
EE 140	Electrical Design	3
EE 139	Illumination Engineering	2
EE 138	Industrial Electrical Power Applications	2
EE 129	Symmetrical Components	3
EE 130	Principles of Electric Power Transmission	4
EE 111-12	Electrical Measurements	4
EE 133-34	Alternating-Current Laboratory	2
EE 189-90	Proseminar in Electrical Engineering	1

Phys. 133	Electronic Circuits	3
Elective	.....	5
Total		34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Elective (5).

Bachelor of Mechanical Engineering

JUNIOR YEAR

		Credit Hours
JUNIOR YEAR		
CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2
ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1-2	Principles of Economics	6
ME 141-42	Management Problems	4
ME 7	Machine Drawing	2
ME 8	Mechanism Drawing	2
Elective	.....	5
Total		36

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Elective (5).

SENIOR YEAR

	Credit Hours
ME 129-30	Power Plants 6
ME 127-28	Machine Design 4
ME 139	Fluid Dynamics 3
ME 140	Dynamics of Machinery 3
ME 131-32	Heating, Ventilating, Air Conditioning, and Refrigeration 4
ME 126	Methods of Manufacture 2
ME 133	Combustion Engines 2
ME 115-16	Mechanical Laboratory 4
ME 189-90	Proseminar in Mechanical Engineering 2
Elective 4
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Total	34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Mechanical Engineering 189-90 (2) and Elective (4).

Bachelor of Science in Engineering

JUNIOR YEAR

JUNIOR YEAR		Credit Hours
CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2

ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1-2	Principles of Economics	6
ME 141-42	Management Problems	4
CE 187-88	Engineering Contracts and Specifications	4
Elective		5
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Elective (5).

SENIOR YEAR		Credit Hours
Option	As approved by the department concerned	34
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for option courses (6) as approved by the department concerned.

The Bachelor of Science in Engineering curriculum provides training in the basic physical principles employed in engineering and in engineering methods of analysis, and in addition, offers an opportunity for study in optional fields in which the student has special interest.

Optional study can be selected from the fields of Business Administration, Chemistry, Economics, Mathematics, Physics, or Statistics. The program of study in the option is formulated by the department concerned in conference with the student. The program, bearing the approval of the department concerned, must be submitted by the student to the Dean's Council for approval before the beginning of the senior year. During the period of optional study the student must comply with such regulations as the department concerned may prescribe.

The following curricula are recommended, for the guidance of students, by the several departments in which optional study is available. Variations from these curricula to satisfy the exceptional needs of individual students may be made by the department concerned.

BACHELOR OF SCIENCE IN ENGINEERING OPTIONAL CURRICULA

Business Administration Option

Acct. 1-2	Introductory Accounting	3
Bus. Adm. 101	Business Organization and Combination	3
Bus. Adm. 131	Business Finance	3
Pol. Sc. 127	Commercial Law: Contracts, Agency, and Bailments	3
Elective	Fifteen credit hours to be selected from the following:	
	Acct. 101: Cost Accounting	
	Acct. 111: Financial Statement Analysis	
	Acct. 155: Business Budgeting	
	Bus. Adm. 105: Personnel Management in Industry	

Bus. Adm. 106:	Problems in Personnel Management
Bus. Adm. 109:	Office Management
Bus. Adm. 121:	General Insurance
Bus. Adm. 141:	Principles of Marketing
Bus. Adm. 145:	Sales Management
Bus. Adm. 150:	Principles of Purchasing
Econ. 121:	Money and Banking
Econ. 171:	Economics of Public Utilities
Econ. 172:	Economics of Transportation
Stat. 111:	Business and Economic Statistics

Chemistry Option

Chem. 21	Qualitative Inorganic Analysis	4
Chem. 22	Quantitative Inorganic Analysis I	4
Chem. 111-12	Physical Chemistry Lectures	6
Chem. 113-14	Physical Chemistry Laboratory	4
Chem. 122	Quantitative Inorganic Analysis II	4
Chem. 135	Inorganic Chemistry: Preparations	
or 155	Organic Chemistry: Preparations	2
Chem. 151-52	Organic Chemistry	8
Elective	Two years of German recommended	12

Economics Option

Econ. 121-2	Economic Analysis	6
Econ. 121	Money and Banking	3
Econ. 141-42	Labor Economics	6
Stat. 111	Business and Economic Statistics I	3
Stat. 112	Business and Economic Statistics II	3
Elective	Six credit hours in Economic Statistics or Business Administration selected with the approval of the Department of Economics.	

Mathematics Option

Fifteen credit hours of mathematics beyond calculus, in second- and third-group courses.

Physics Option

Math. 132	Differential Equations	3
Phys. 106	Optics	3
Phys. 113-14	Atomic and Statistical Physics	6
Phys. 132	Electronics	3
Phys. 155	Advanced Physical Measurements	3

Statistics Option

Stat. 91-92	Principles of Statistical Methods	6
Stat. 117	Analysis of Variance	3
Stat. 118	Correlation and the Chi-Square Test	3
Stat. 155-56	Mathematical Probability	6
Stat. 157-58	Mathematical Statistics	6

THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING

Upon the satisfactory completion of the graduate requirements of the School of Engineering the degree of Master of Science in Engineering is

conferred. The discipline of this degree is designed to produce a graduate who will possess a broad knowledge and understanding of fundamental scientific and engineering principles, substantial skill in their application, and an attitude of responsibility toward society and the engineering profession. To this end the responsibility for the student's program of study is established in a Graduate Advisory Committee composed of members of the University Faculty and specialists selected from the engineering profession. The program has no fixed requirements as to specific course content or number of credit hours. It is prescribed for each candidate on the basis of his individual needs in achieving a mastery of principles and methods.

ADMISSION TO CANDIDACY

Applications for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Graduate Advisory Committee of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline and must have acceptable personal qualities. Applicants holding Bachelor's degrees in engineering from a recognized institution, and whose record, in the opinion of the Graduate Advisory Committee, gives evidence of adequate preparation for graduate study may be admitted to candidacy for the graduate degree. Applicants who do not hold a satisfactory Bachelor's degree in engineering, or whose adequacy of preparation is questioned may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

ADVANCED STANDING

Graduate study completed prior to admission to candidacy for the degree will be considered by the Graduate Advisory Committee in prescribing the candidate's program of study provided it contributes substantially to the achievement of mastery of principles and methods. In any case a minimum of one year full-time study must be completed under the Graduate Advisory Committee.

REQUIREMENTS FOR THE DEGREE

The candidate for the degree must complete a minimum of one year of full-time study under the guidance of the Graduate Advisory Committee; complete the program prescribed by that committee, including course examinations; and demonstrate, by passing a comprehensive ex-

amination, substantial mastery of scientific principles and methods of their use in the area of his interest. This examination may be written, oral, or both, at the discretion of the Committee.

Candidates with limited areas of unsatisfactory preparation may be required to complete additional necessary remedial or preparatory study.

All of the work applied toward this degree must be accomplished under the guidance of the Graduate Advisory Committee.

Course work applied to satisfy requirements for another degree may not be applied to satisfy requirements for the graduate degree in engineering.

With the approval of the Graduate Advisory Committee the candidate may include a thesis in his program. He will be subject to an oral examination on his thesis.

Grades for graduate work are "Excellent" (*A*), "Satisfactory" (*B*), and "Unsatisfactory" (below *B*). A student whose work is unsatisfactory will be suspended by the Dean, upon the recommendation of the Graduate Advisory Committee or the student's assigned adviser.

The candidate must complete the requirements for the degree within three years, if he is a full-time student; within five years, if he is a part-time student.

THE PROFESSIONAL DEGREES

The professional degree of Civil Engineer, Electrical Engineer, or Mechanical Engineer may be conferred upon a graduate of the School of Engineering who has demonstrated his professional ability.

REQUIREMENTS FOR THE DEGREE

1. Application may not be made sooner than three years after graduation, and then only if the candidate has had definite responsibility for engineering work of substantial importance.

2. A detailed statement of the candidate's experience, references, the degree sought, and the title of the dissertation must be filed with the Dean eight months before the Commencement at which the degree is to be conferred.

Detailed information concerning the preparation of the dissertation may be obtained from the Office of the Dean.

3. The dissertation will be read for acceptance by an examining committee appointed by the Dean to include members of the Faculty of the School of Engineering and at least one expert from engineering practice. The committee will report its recommendation to the Faculty of the School of Engineering.

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Detailed information concerning the preparation of the dissertation may be obtained from the Office of the Dean.

3. The dissertation will be read for acceptance by an examining committee appointed by the Dean to include members of the Faculty of the School of Engineering and at least one expert from engineering practice. The committee will report its recommendation to the Faculty of the School of Engineering.

THE SCHOOL OF PHARMACY

THE FACULTY AND STAFF OF INSTRUCTION*

Charles Watson Bliven, M.S., *Dean of the School of Pharmacy*

Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Lawson Edwin Yocum, Ph.D., *Professor of Botany*
Charles Watson Bliven, M.S., *Professor of Pharmacy*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Chester Elwood Leese, Ph.D., *Professor of Physiology*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
George Martin Koehl, A.M., *Professor of Physics*
Robert Corbin Vincent, Ph.D., *Associate Professor of Chemistry*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
Salvatore Joseph Greco, Ph.D., *Associate Professor of Pharmacy*
Robert Meyer Leonard, Ph.D., *Assistant Professor of Pharmacology and Pharmacognosy*
Willis Eugene Moore, Ph.D., *Assistant Professor of Pharmaceutical Chemistry*
Harold Jerome Bobys, A.B., C.P.A., *Lecturer on Pharmacy Accounting*
Carson Gray Frailey, A.B., LL.B., *Lecturer on Pharmaceutical Law*
Ralph Bryan, B.S., *Lecturer on Pharmacy Management*
Franklin Dero Cooper, M.S., *Instructor in Hospital Pharmacy*

SPECIAL LECTURERS

William Paul Briggs, M.S., Sc.D., LL.D., *Executive Director and Secretary, American Foundation for Pharmaceutical Education; Pharmacy Training*
Frederick John Cullen, Ph.D., M.D., *Executive Vice-President, The Proprietary Association; Drug Manufacture*
John Christian Krantz, Jr., Ph.D., *Professor of Pharmacology, University of Maryland; Pharmaceutical Research*
Justin Lawrence Powers, Ph.D., *Chairman, Committee on National Formulary, American Pharmaceutical Association; Official Drug Standards*

* The President of the University, the Dean of Faculties of the University, the Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Assistant Professors, Associate Professors, and Instructors constitute the Faculty.

George Potter Larrick, *Deputy Commissioner of Food and Drugs, Food and Drug Administration; Drug Control*
 Robert Philip Fischelis, B.S., Phar.D., Sc.D., *Secretary and General Manager, American Pharmaceutical Association; Pharmaceutical Organizations*
 Daniel Lamont Seckinger, M.D., Dr.P.H., *Director of Public Health, District of Columbia; Hygiene and Sanitation*
 PGad Bryan Morehouse, A.B., LL.B., LL.M., *Assistant General Counsel in Charge of Compliance, Federal Trade Commission; Drug Trade Regulation*
 Louis Edward Kazin, Ph.G., *Associate Editor, Drug Topics; Contemporary Pharmacy*

COMMITTEES •

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 Robert Corbin Vincent

GENERAL INFORMATION

INTRODUCTORY

In 1867 the foundation for the National College of Pharmacy was laid by the Apothecaries' Association of the District of Columbia. The College was opened in 1872 and continued until 1906, when it became affiliated with The George Washington University.

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy.

Washington offers many opportunities for the student of pharmacy. The American Institute of Pharmacy, the headquarters of the American Pharmaceutical Association, is only a few blocks from the School of Pharmacy. The Institute also houses a pharmaceutical museum, a library,

* The President of the University and the Dean of the School of Pharmacy are members ex officio of all committees.
 ‡ Elected by the Faculty.

and research laboratories. Government agencies and laboratories whose activities are closely allied to pharmacy, and the government libraries, the facilities of which are open to the student, are readily accessible.

The Institute and the Federal Government bring to Washington leaders in the fields of pharmacy, many of whom present to senior students in the School of Pharmacy current professional information.

The objectives of the School of Pharmacy are: (1) to train professionally competent pharmacists, primarily for retail practice, and to help them acquire specialized training, a good general education, and an attitude of responsibility to their profession and to society; (2) to promote the health profession of pharmacy in general, and particularly within the community.

To achieve these objectives the School has developed a systematic plan of instruction for the professional courses which is integrated with the liberal arts program. It further encourages student participation in university, professional, and civic organizations and activities which increase professional competence, raise professional standards, and help develop social responsibility.

REGULATIONS

Students in the School of Pharmacy are subject to and are expected to familiarize themselves with the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES as stated on pages 12-26, and the University regulations stated on pages 42-49.

Students registered in the Junior College Pharmacy curriculum are subject to the regulations of the Junior College. However, in the professional courses of that curriculum, the attendance requirements of the School of Pharmacy prevail.

AMOUNT OF WORK

Normal work for any year is that outlined under the head of "Curriculum Requirements", below. A student who wishes to take more than the normal amount of work may do so only with the permission of the Committee on Scholarship, the members of which are guided in their decision by the scholastic record and the extent to which he is employed. A student on probation is limited in the number of credit hours he may carry.

The student is not encouraged to undertake outside employment while attempting a full course of study. A student who maintains a quality-point index of 2.00 or higher for all courses and a quality-point index of 2.50 or higher for pharmacy courses may be granted permission by the Dean to undertake outside employment. The amount of the employment permitted is governed by the scholarship record of the student and the number of credit hours for which he is registered.

A student previously unemployed who accepts employment subsequent to registration or at any time during a term is required to report that fact immediately to the Dean.

ATTENDANCE

Except by special permission of the instructor, credit will not be given for any pharmacy course if absences, including both lecture and laboratory, exceed in number for each term the hours of credit for the term. If a course has distinct divisions such as lectures, laboratories, or recitations, the absences apply pro rata to such divisions.

EXAMINATIONS BEFORE STATE BOARDS OF PHARMACY

To be eligible for examination before state boards of pharmacy, the applicant is required to present satisfactory evidence of graduation from a college of pharmacy. In addition, most states require that the applicant have one year of practical experience in a pharmacy. This experience may not be gained concurrently with the school year.

THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

Upon the satisfactory completion of the requirements of the School of Pharmacy, the degree of Bachelor of Science in Pharmacy is conferred.

REQUIREMENTS FOR THE DEGREE

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 42 and 43.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, he must have a quality-point index of at least 2.50 in all pharmacy courses.

Probation.—A student must maintain a general quality-point index of at least 2.00, or be placed on probation.

A student remains on probation as long as his general quality-point index is below 2.00; however, a student who has an index of between 1.50 and 2.00 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

Suspension.—A student who has a general quality-point index below 1.50 will be suspended; however, a student who has an index between 1.40 and 1.50 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of a calendar year. He must then submit evidence to the Dean of the School of Pharmacy, that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship rules are applied when a student has undertaken a multiple of nine credit hours.

CURRICULUM

The Junior College Pharmacy curriculum (see pages 63-64) comprises the first two years of the four-year pharmacy course. The curriculum is established by the faculties of the School of Pharmacy and the Junior College in accordance with the professional needs, and complies, in so far as possible, with the latter group regarding the general cultural studies.

The laboratory method of teaching is used. Recitation classes are held in connection with each course in order to provide systematic drill in the subjects.

The curriculum requirements include at least 137 credit hours. At least two credit hours of the elective courses must consist of laboratory work. The following curriculum leads to the degree of Bachelor of Science in Pharmacy.

Freshman and Sophomore Years

Courses	Did hrs.	Lab. hrs.	Credit hrs.	Clock hrs.
Courses in the Junior College (see pages 63-64)	864	704	69	1568

Junior Year: Fall Term

Courses	Did hrs.	Lab. hrs.	Credit hrs.	Clock hrs.
Chemistry 151	48	48	4	96
Pharmacy 101	32	48	3	80
Pharmacy 105	12	...	2	48
Pharmacy 107	48	...	3	48
Physiology 115	48	48	1	48
Physiology 117	...	...	...	...
Total	208	144	16	352

Junior Year: Spring Term

Bacteriology 112.....	48	96	4	144
Chemistry 152.....	32	96	4	128
Pharmacy 102.....	32	96	4	128
Pharmacy 106.....	32	....	2	32
Pharmacy 110.....	48	....	3	48
Total.....	192	288	17	480

Senior Year: Fall Term

*Biochemistry 221.....	32	96	4	128
Pharmacy 103.....	32	96	4	128
Pharmacy 111.....	32	48	3	80
Pharmacy 165.....	48	....	3	48
Elective.....	16	96	3	112
Total.....	160	336	17	496

Senior Year: Spring Term

Bacteriology 210.....	32	....	2	32
*Biochemistry 222.....	32	96	4	128
Pharmacy 166.....	32	64	3	96
Pharmacy 176.....	32	....	2	32
Pharmacy 178.....	64	....	4	64
Pharmacy 188.....	32	....	....	32
Pharmacy 190.....	16	....	1	16
Pharmacy 192.....	....	48	1	48
Elective.....	16	....	1	16
Total.....	256	208	18	464
Grand total.....	1680	1680	117	3360

* Students planning to do graduate work may request the substitution of other courses for Biochemistry 221-22 if these courses will be included in the graduate curriculum.

THE DEGREE OF MASTER OF SCIENCE IN PHARMACY

Upon the satisfactory completion of the graduate requirements of the School of Pharmacy, the degree of Master of Science in Pharmacy is conferred.

DEFINITION OF THE MASTER'S WORK

The study leading to the degree of Master of Science in Pharmacy is a comprehensive survey of one or more of the fields of knowledge embraced by Pharmacy. It is a continuation of the work of the student's undergraduate major and involves a greater acquaintance with scholarly method.

The student must satisfy certain minimum requirements as to previous preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's examination (together with such other examinations involving special skills or techniques as may be required), is the basis upon which the Master's degree is conferred. The foreign language requirement may be waived by faculty action in the instance of students whose field of study at the Master's level may not require such preparation.

REQUIREMENTS FOR THE DEGREE

RESIDENCE

An academic year of residence is required, i.e., completion of a minimum of thirty credit hours of work including the thesis, which is counted as the equivalent of six credit hours of course work. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than twelve credit hours (which must be approved in advance by the Dean of the School of Pharmacy) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in the School of Pharmacy.

AMOUNT OF WORK

A student whose previous preparation in his chosen field has been adequate may complete his requirements, including the thesis, by a minimum of thirty credit hours; others are required to do additional work.

First-group courses may not be credited toward the Master's degree. Pharmacy courses numbered below 200 may be credited toward the Master's degree only when registration for graduate credit has been approved at the beginning of the course by the instructor and the Dean of the School of Pharmacy.

ADMISSION TO CANDIDACY

In addition to admission requirements stated on page 19, the applicant for admission to candidacy for the Master's degree must be approved by the appropriate representative of the Department of Pharmacy and by the Dean.

SCHOLARSHIP

A student whose scholarship is considered unsatisfactory may be suspended by the Dean upon recommendation of the staff member under whom the student is working.

THE MASTER'S THESIS

The thesis may be of a research, expository, critical, or creative type.

The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other discipline, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final term. The choice of the thesis subject must be approved by the professor in charge of the student's field and recorded in the Office of the Registrar by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of three credit hours for two successive terms. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire six credit hours during a single term. The type-written thesis in its final form must have the approval of the professor in charge of the student's field and must be presented to the Dean by the student not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 46-47, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends

Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
 Anthony La Bue, Ed.M., *Associate Professor of Education*
 Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Men*
 Mary Ellen Coleman, A.M., *Assistant Professor of Education; Director of the Reading Clinic*
 Madaline Kinter Remmlein, Ph.D., J.D., *Lecturer in Education*
 LuVerne Crabtree Walker, A.M., *Lecturer in Education*
 Florence Mary Lumsden, A.M., Ed.D., *Lecturer in Education*
 William Samuel Rumbough, A.M., Ed.D., *Lecturer in Education*
 Raymond Ray Reed, A.M., *Lecturer in Education*
 Joseph Bucol Johnson, A.M., Ed.D., *Lecturer in Education*
 Mary Louise Collings, A.M., *Lecturer in Education*
 Grover LaMarr Angel, A.M., Ed.D., *Lecturer in Education*
 Eugenia Campbell Nowlin, A.M., *Lecturer in Education*
 Roland Henry Tanck, A.M., *Instructor in Psychology*

CONSULTANTS IN RESEARCH

Wesley Earl Armstrong, M.S., Ed.D., *Chief for Teacher Education, U. S. Office of Education*
 John Robert Ludington, Ph.D., *Specialist in Industrial Arts, U. S. Office of Education*
 Francis James Brown, Ph.D., *Staff Associate, American Council on Education*

FIELD SERVICE COORDINATORS

William Wallace Rich, A.M., *Supervisor of Secondary Schools, Arlington County, Virginia*
 Helen King Finlay, A.M., *Assistant Principal, Washington-Lee High School, Arlington, Virginia*

COMMITTEES*

THE DEAN'S COUNCIL†

1955

Frances Kirkpatrick
 Elizabeth Burtner

1956

Frank Mark Weida
 Burnice Herman Jarman

1957

Don Carlos Faith
 Joseph Henry Krupa

* The President of the University and the Dean of the School of Education are members of offices of all committees.
 † Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING

The Dean of the School, Chairman

Harold Griffith Sutton
Frances Kirkpatrick
William Henry Myers

Frank Mark Weida
Burnice Herman Jarman
Ruth Harriet Atwell

COMMITTEE ON SCHOLARSHIP

Blake Smith Root, Chairman

William Henry Myers

Helen Bennett Lawrence

Kathryn Mildred Towne

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, supervisors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics. It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of Washington and vicinity may complete all the requirements for a degree without giving up their positions.

REGULATIONS

Students in the School of Education are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26, and the University regulations stated on pages 42-49.

AMOUNT OF WORK

A normal program of work for an undergraduate student is fifteen credit hours. A student with a quality-point index of 3.00 or higher may, with the Dean's permission, take eighteen hours. More than eighteen hours may not be taken except by special permission of the Committee on Scholarship.

For an employed student six or seven credit hours constitute a normal program. A student with a quality-point index of 3.00 or higher for the

preceding term may be permitted by the Dean to take nine or ten credit hours.

For a graduate student fifteen or sixteen credit hours constitute a normal program. For an employed student six or seven credit hours constitute a normal program. If scholarship is sufficiently high, or the nature of employment unusual, the Dean may permit registration for additional credit hours.

A student carrying a full-time program may not be employed part-time for more than fifteen hours a week without permission of the Dean.

THE BACHELOR'S DEGREES

Upon the satisfactory completion of the undergraduate requirements of the School of Education, the degree of Bachelor of Arts in Education, Bachelor of Science in Home Economics, or Bachelor of Science in Physical Education is conferred.

The program of work of each student must be approved by a Faculty adviser. Since each student's program of work will be defined by his particular needs, it is important that the student have a clear conception of his major interest in education, and also that he be familiar with the teaching-certificate requirements in the locality in which he expects to teach.

REQUIREMENTS FOR THE DEGREES

To be recommended for a degree a student must satisfy the admission, residence, scholarship, and curriculum requirements.

RESIDENCE

Candidates for the Bachelor's degrees must complete satisfactorily at this University a minimum of thirty credit hours, nine of which, with the approval of the adviser, may be in the College of General Studies off-campus courses.

For full details concerning continuous registration, see page 46.

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 42 and 43.

In order to graduate, a student must have a quality-point index of at least 2.00.

Probation.—An undergraduate student who fails to maintain a quality-point index of at least 2.00 will be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—An undergraduate student who fails to pass in half or more than half of his work, based on a minimum of sixteen credit hours, will be suspended.

A student who has been suspended for poor scholarship may within ten days appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student appears likely to improve in his scholarship thereafter, the Committee may readmit him on probation. A student who has been denied readmission on probation may petition the Committee on Scholarship through the Dean for readmission after the lapse of a calendar year. A student who has been suspended twice will not be readmitted.

CURRICULUM REQUIREMENTS

In any of the following curricula at least thirty credit hours must consist of courses numbered above 100.

Bachelor of Arts in Education

Programs leading to the degree of Bachelor of Arts in Education have four main objectives: (1) provision of general educational backgrounds, (2) a functional command of ideas, concepts, knowledges, and skills in one or more teaching fields, (3) a mastery of basic professional information and skills adequate for a beginning teacher, and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of credit hours. None require less than 126 credit hours of satisfactory work, exclusive of required Physical Education. Normally, 60 credit hours of the total requirement are completed in the Junior College of the University or in an equivalent institution elsewhere. (See "Education", page 64.)

The general educational backgrounds needed by prospective teachers are obtained through: (1) pre-college education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations, and satisfactory completion of the prescribed special methods courses. Programs of study are available in the following fields: art, biology, business education, chemistry, elementary education, English, French, geography, German, history, home economics, mathematics, physics, social studies, Spanish, and speech.

Bachelor of Science in Home Economics

The curriculum leading to this degree is designed to prepare young women for the important responsibility of home-making. The program can be adapted, however, to meet special requirements in nutrition, dietetics, clothing, and other related fields. Each student must plan her work with the assistance of a Faculty adviser in the Department of Home Economics.

GENERAL HOME-MAKING

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Home Economics 53.....	3		Home Economics 152.....	3	
Home Economics 72.....	3		Home Economics 171.....	3	
Home Economics 102.....	3		Home Economics 181.....	3	
Home Economics 123.....	3		Home Economics 192.....	6	
Physiology 115.....	3		Home Economics 197-98.....	12	
Electives.....	15		Electives.....	30	
Total.....	30		Total.....	30	

Bachelor of Science in Physical Education for Men

There are three curricula leading to this degree. The Single-Major and Subject-Certification Teacher's Course is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Course prepares for the teaching of physical education in the larger schools. The Physical Education and Recreation Course has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The minimum requirements for this degree are sixty-six credit hours, distributed as follows:

SINGLE-MAJOR AND SUBJECT-CERTIFICATION TEACHER'S COURSE

The minimum requirements for this degree are twenty-one credit hours in education, twenty-four credit hours in physical education, eighteen credit hours in an academic teaching field, and three credit hours in physiology, distributed as follows:

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Education 109-10.....	6		Education 131.....	3	
Education 121-22.....	6		Education 133-34.....	4	
Physical Education 103.....	3		Physical Education 115-16.....	3	
Physical Education 105.....	3		Physical Education 122.....	3	
Physical Education 107.....	1		Physical Education 131.....	3	
Physical Education 113-14.....	4		Physical Education 138.....	11	
Physiology 115.....	3		Academic teaching field.....	33	
Academic teaching field.....	7		Total.....	33	
Total.....	33				

SINGLE-MAJOR TEACHER'S COURSE

The minimum requirements for this degree are twenty-one credit hours in education, twenty-eight credit hours in physical education, three credit hours in physiology, and fourteen credit hours of electives:

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Education 109-10.....	6		Education 131.....	3	
Education 121-22.....	6		Education 133-34.....	6	
Physical Education 103.....	3		Physical Education 105.....	3	
Physical Education 107.....	1		Physical Education 122.....	3	
Physical Education 109-10.....	4		Physical Education 131.....	3	
Physical Education 113-14.....	4		Physical Education 138.....	3	
Physical Education 115-16.....	4		Electives.....	12	
Physiology 115.....	3				
Electives.....	2		Total.....	33	
Total.....	33				

PHYSICAL EDUCATION AND RECREATION COURSE

The minimum requirements for this course are sixty-six credit hours, distributed as follows:

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Education 109.....	3		Education 131.....	3	
Education 121-22.....	6		Education 133-34.....	6	
Physical Education 48.....	2		Physical Education 103.....	3	
Physical Education 107.....	1		Physical Education 122.....	3	
Physical Education 109-10.....	4		Physical Education 131.....	3	
Physical Education 113-14.....	4		Physical Education 138.....	3	
Physical Education 132.....	1		Physical Education 161.....	3	
Physical Education 151-52.....	6		Physical Education 162.....	3	
Electives.....	6		Electives.....	6	
Total.....	33		Total.....	33	

Bachelor of Science in Physical Education for Women

There are three curricula leading to this degree. The Dual-Major Teacher's Course is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Course prepares for the teaching of physical education in the larger schools. Within this course there is opportunity for specialization in dance, sports, or correctives. The Physical Education and Recreation Course has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The minimum requirements for this degree are sixty-six credit hours, distributed as follows:

DUAL- OR SINGLE-MAJOR TEACHER'S COURSE

The student desiring to prepare herself to teach another subject in addition to Physical Education for Women may do so by choosing her elective hours from one subject-matter field with the advice of the Dean of the School of Education. Relevant work completed in the Junior College may be counted in this subject-matter field.

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Education 109-10.....	6	6	Education 121-22.....	6	6
Physical Education 58.....	2	2	Education 133-34.....	4	4
Physical Education 101.....	3	3	Physical Education 113-14.....	3	3
Physical Education 103.....	3	3	Physical Education 121.....	3	3
Physical Education 105-6.....	6	6	Physical Education 122.....	3	3
Physical Education 107.....	1	1	Physical Education 131.....	1	1
Physical Education 111-12.....	2	2	Physical Education 138.....	6	6
Physical Education 117-18.....	2	2	Electives.....	14	14
Physical Education 132.....	1	1	Total.....	34	34
Physiology 115.....	3	3			
Electives.....	3	3			
Total.....	33	33			

PHYSICAL EDUCATION AND RECREATION COURSE

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Physical Education 48.....	2	2	Education 121-22.....	6	6
Physical Education 58.....	2	2	Education 133-34.....	4	4
Physical Education 101.....	3	3	Physical Education 103.....	3	3
Physical Education 105-6.....	6	6	Physical Education 113-14.....	3	3
Physical Education 107.....	1	1	Physical Education 122.....	3	3
Physical Education 109-10.....	4	4	Physical Education 132.....	3	3
Physical Education 111-12.....	2	2	Physical Education 138.....	3	3
Physical Education 117-18.....	2	2	Physical Education 161.....	3	3
Physical Education 151-52.....	6	6	Physical Education 162.....	3	3
Physiology 115.....	3	3	Total.....	32	32
Electives.....	3	3			
Total.....	34	34			

Prescribed Courses in the Various Teaching Fields

ART

One two-term course from the following group.....

- Art 121-221 World History of Art
- Art 151-52 Modern Art
- Art 161-62 History of Art Criticism

Two term courses from the following group.....

- Art 71-72 Introduction to the Arts in America
- Art 1-1-2 The Design of the Home
- Art 141-42 Interior Decoration
- Art 143 Folk Arts of America

Two two-term courses from the following group.....	24
Art 65-66: Drawing and Painting—Life, Still Life, and Portrait	
Art 67-68: Drawing and Painting—Life and Portrait	
Art 75-76: Drawing and Painting—Life, Still Life, and Portrait	
Art 165-66: Drawing and Painting—Life and Portrait	
Art 175-76: Drawing and Painting—Life and Portrait	
Art 179-80: Sculpture	
Art 183-84: Design and Commercial Art	
Six credit hours in the teaching of Art.....	6
Total.....	42

BIOLOGY

Biology 1-2: Survey in Biology.....	6
Botany 1: Structure and Functions of the Flowering Plant.....	3
Home Economics 152: Nutrition.....	3
Physiology 115: Physiology.....	3
Zoology 1-2: Introduction to Zoology.....	8
Additional courses as approved by the adviser.....	12
Education 144: Teaching Science.....	3
Total.....	38

BUSINESS EDUCATION

Accounting 1: Introductory Accounting.....	3
Business 1-2: Principles of Economics.....	6
Secretarial Studies 51: Business Correspondence.....	3
Additional courses as prescribed in one of the following groups:	
Group 1—Secretarial Studies	
Secretarial Studies 2: Intermediate Typewriting.....	3
Secretarial Studies 12: Intermediate Shorthand and Transcription	3
Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription.....	3
Secretarial Studies 16: Secretarial Shorthand, Typewriting, and Transcription.....	3
Secretarial Studies 54: Secretarial Practice.....	3
Additional courses from the following, as approved by the adviser	6
Accounting 2: Introductory Accounting	
Business Administration 101: Business Organization and Com-	
ination	
Business Administration 109: Office Management	
Business Administration 141: Principles of Marketing	
Business Administration 151: Retailing	
Economics 121: Money and Banking	
Political Science 127: Commercial Law	
Statistics 52: Mathematics of Finance	
Education 150: Teaching Business Subjects.....	2
Total.....	35
Group 2—Bookkeeping, Business Arithmetic, and Business Law	
Accounting 2: Introductory Accounting.....	3
Business Administration 101: Business Organization and Com-	
ination.....	3

Business Administration 102: Business Management.....	3
Political Science 127-28: Commercial Law.....	6
Statistics 52: Mathematics of Finance.....	3
Two of the following courses, as approved by the adviser.....	6
Accounting 111: Financial Statement Analysis	
Business Administration 121: General Insurance	
Business Administration 131: Business Finance	
Business Administration 138: Investments	
Economics 121: Money and Banking	1
Education 150: Teaching Business Subjects.....	38

Total.....

Group 3—Distributive Education

Business Administration 141: Principles of Marketing.....	3
Business Administration 142: Marketing Problems.....	3
Business Administration 145: Sales Management.....	3
Business Administration 151: Retailing.....	12
Four of the following courses, as approved by the adviser.....	
Business Administration 146: Sales Management Problems	
Business Administration 147: Advertising	
Business Administration 150: Principles of Purchasing	
Business Administration 158: Traffic Management	
Business Administration 175: Introduction to Foreign Trade	2
Business Administration 176: Exporting and Importing	
Education 150: Teaching Business Subjects.....	38

Total.....

CHEMISTRY

Chemistry 11-12: General Chemistry.....	8
Chemistry 21: Qualitative Inorganic Analysis.....	4
Chemistry 22: Quantitative Inorganic Analysis.....	4
Chemistry 151-52: Organic Chemistry.....	8
Chemistry 191: History of Chemistry.....	2
One of the following.....	8-10
Chemistry 111-12 and 113-14: Physical Chemistry	
Biochemistry 221-22: Biochemistry	3
Education 144: Teaching Science.....	37-39

Total.....

ELEMENTARY EDUCATION

Education 113: Elementary School Art.....	3
Education 114: Elementary School Music.....	1
Education 128: Children's Literature.....	9
Science, as approved by adviser.....	6-14
Geography 51: Introduction to Geography.....	3
Geography 52: World Regions.....	3
Physical Education 101: Physical Education in Elementary School..	6
Political Science 9-10: Government of the United States.....	32-38

Total.....

ENGLISH

English 1, 2: English Composition.....	6
English 52: Introduction to English Literature.....	3
English 71-72: Introduction to American Literature.....	6
English 125: The Evolution of Modern Speech.....	3
English 135-36: Shakespeare	6
Speech 11: Training the Speaking Voice.....	3
Three of the following term courses, with the approval of the adviser.....	9
English 126: The Appreciation of Literature	
English 151-52: The Romantic Movement	
English 161-62: Victorian Literature	
English 165-66: The Twentieth Century	
English 171-72: Studies in American Literature	
English 173-74: Major American Poets	
English 176: American Drama	
English 177-78: American Fiction	
English 182: The English Novel	
English 199: Proseminar	
Education 136: Teaching English.....	3
Total.....	39

FRENCH

French 1-2: First-year French.....	6
French 3-4: Second-year French.....	6
French 9-10: French Conversation and Composition.....	6
French 51-52: Survey of French Literature and Civilization.....	6
Additional courses in French, as approved by the adviser.....	12
Education 146: Teaching Foreign Languages.....	3
Total.....	39

GEOGRAPHY

Geography 51: Introduction to Geography.....	3
Geography 52: World Regions.....	3
Geography 103-4: Cartography	6
Geography 113: Geomorphology	3
Geography 114: Weather and Climate.....	3
Geography 151: Economic Geography of the United States.....	3
Geography 152: Political Geography of the United States.....	3
Two of the following term courses.....	6
Geography 183: Northwest Europe	
Geography 184: Mediterranean Region	
Geography 191: Middle America	
Geography 192: South America	
Geography 195: Eastern and Southeastern Asia	
Geography 198: Australia and the Pacific	
Two of the following term courses.....	6
Geography 125: Economic Geography: Trade and Transportation	
Geography 126: Economic Geography: Strategic Materials	
Geography 127: Economic Geography: Manufacture	
Geography 128: Economic Geography: Agriculture	
Geography 131: Conservation of Natural Resources	

Geography 132: Land Use	
Geography 141: Geography of Settlement	
Geography 142: Urban Geography	3
Education 138: Teaching the Social Studies	39
Total	

GERMAN

German 1-2: First-Year German	6
German 3-4: Second-year German	6
German 51-52: Introduction to German Literature	18
Additional courses in German, as approved by the adviser	3
Education 146: Teaching Foreign Languages	39
Total	

HISTORY

History 39-40: The Development of European Civilization	6
History 71-72: The Development of the Civilization of the United States	6
Six credit hours, as approved by the adviser, from each of the following groups	18
Group 1—American History	
History 171-72: Social History of the United States	
History 173: Representative Americans	
History 174: Economic History of the United States	
History 181-82: Diplomatic History of the United States	
Group 2—European History	
History 109: Thought and Culture of the Western World I: Ancient Civilization	
History 110: Thought and Culture of the Western World II: The Middle Ages and the Renaissance	
History 130: Nationalism	
History 145-46: Russian History	
History 147: Economic History of Europe	
History 149-50: European Diplomatic History	
History 151-52: English History	
Group 3—Latin American History	
History 163: Latin American History—Colonial Period	
History 164: South America since Independence	
History 166: Mexico and the Caribbean since Independence	
Political Science 175: International Politics in the Western Hemisphere	
Political Science 176: Recent Trends in Latin American Politics and Government	
Additional credit hours, as approved by the adviser, from one of the foregoing groups	6
Education 138: Teaching the Social Studies	3
Total	39

MATHEMATICS

Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3

Mathematics 12: Analytic Geometry.....	3
Mathematics 19: Differential Calculus.....	3
Mathematics 20: Integral Calculus.....	3
Mathematics 123: Theory of Equations, or	
Mathematics 125: Advanced Algebra.....	3
Mathematics 132: Differential Equations, or	
Mathematics 139: Advanced Calculus.....	3
An additional course in Mathematics, as approved by the adviser....	3
Statistics 52: Mathematics of Finance.....	3
Education 140: Teaching Mathematics.....	3

Total.....	30
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PHYSICS

Physics 5, 6, 7, and 8: General Physics.....	12
Physics 55: Physical Measurements.....	3
Physics 101: Mechanics.....	3
Physics 105: Principles of Electricity.....	3
Physics 106: Optics.....	3
Chemistry Elective—Chemistry 11–12: General Chemistry or	
Chemistry 12–21: General Chemistry and Qualitative Inorganic	
Analysis.....	8
Mathematics 12: Analytic Geometry.....	3
Mathematics 19: Differential Calculus.....	3
Mathematics 20: Integral Calculus.....	3
Six credit hours to be selected from the following.....	6
Physics 102: Heat and Thermodynamics	
Physics 113: Atomic Physics	
Physics 114: Statistical Physics	
Physics 128: Sound	
Physics 132: Electronics	
Physics 155–56: Advanced Physical Measurements	
Education 144: Teaching Science.....	3

Total.....	50
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SOCIAL STUDIES

History 39–40: The Development of European Civilization.....	6
History 71–72: The Development of the Civilization of the United	
States.....	6
Political Science 9–10: Government of the United States.....	6
Two of the following courses.....	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography and World Regions	
Religion 59–60: History of Religions	
Sociology 1–2: Introductory Sociology	
Additional second-group courses, as approved by the adviser, from one	
of the following fields: Economics, Geography, History, Political	
Science, Religion, Sociology.....	12
Education 138: Teaching Social Studies.....	3

Total.....	45
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SPANISH	
Spanish 1-2: First-year Spanish.....	6
Spanish 3-4: Second-year Spanish.....	6
Spanish 9-10: Spanish Conversation and Composition.....	18
Additional courses, as approved by the adviser.....	3
Education 146: Teaching Foreign Languages.....	39
Total.....	

SPEECH	
Speech 1: Effective Speaking.....	3
Speech 2: Persuasive Speaking.....	3
Speech 11: Training the Speaking Voice.....	3
Speech 32: Oral Reading.....	3
Speech 101: Voice and Phonetics.....	3
Speech 131: Group Discussion and Conference Leadership.....	3
Speech 153: Play Production.....	3
Speech 175: Speech Correction.....	3
Education 136: Teaching English.....	
One of the following areas of specialization, as approved by the adviser:	
Group 1—Speech Arts	12
Twelve credit hours to be chosen from the following.....	
Speech 102: Oral Interpretation of Literature	
Speech 136: Public Discussion and Debate	
Speech 154: Play Production	
Speech 166: History of the Theatre	
Speech 169: Creative Dramatics and Children's Theatre	
Group 2—Speech Correction	12
Twelve credit hours to be chosen from the following.....	
Speech 176: Speech Correction	
Speech 177-78: Clinical Practice in Speech Therapy	
Speech 182: Introduction to Hearing Problems	
Speech 183-84: Clinical Practice in Hearing Therapy	
Additional courses in English, Physiology, Psychology, or Speech, as approved by the adviser	
Total.....	

PROFESSIONAL EDUCATION

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses

Education 109-10: Learning and Teaching.....	6
• Education 111-12: Elementary School Curriculum.....	6

• Not required for those preparing for secondary school teaching.

Education 121-22: Society and the School.....	6
Education 131: Common Teaching Skills.....	3
Education 133-34: Observation and Student Teaching.....	6-9
Education 136 to 150: Special Methods.....	2-6
Total.....	24-30

THE DEGREE OF MASTER OF ARTS IN EDUCATION

Upon the satisfactory completion of the graduate requirements of the School of Education, the degree of Master of Arts in Education is conferred. This is a professional degree, designed to prepare the student for some particular type of educational service. The program of studies leading to the degree is selected by the candidate and his adviser from the various related departments of the University to give the student an adequate background in his chosen vocational field. For the prospective high school or junior high school teacher this will ordinarily include study in the subject which he is planning to teach as well as in the field of education.

In accordance with the foregoing general pattern of work, graduate programs of study are available in the following fields: (1) school administration—secondary school principalship or elementary school principalship; (2) adult education; (3) secondary education—senior or junior high school; (4) elementary education—intermediate grade or early childhood education; (5) agricultural extension education; (6) curriculum; (7) employee training; (8) guidance. Programs of work for teachers-in-service are differentiated from those for students without teaching experience. Additional information concerning these programs may be obtained by writing to the Dean.

ADMISSION TO CANDIDACY

The requirements for admission to candidacy for the Master's degree are stated on page 19. Those desiring to prepare for positions in guidance or administration must have had at least two years of successful teaching experience. Candidates who have had no professional courses must satisfactorily complete the required undergraduate professional courses, including Observation and Student Teaching, in addition to graduate course requirements.

ADVANCED STANDING

Graduate work completed in other accredited institutions of learning may be credited toward the Master's degree, but a minimum of thirty credit hours must be completed at The George Washington University as a matriculated candidate in the School of Education.

* Not required for those preparing for elementary school teaching.

Advanced courses completed in excess of the requirements for the Bachelor's degree in this University may be credited toward the Master's degree to the extent of twelve credit hours, provided the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

In determining advanced standing at the time of admission or readmission to Master's candidacy at this University, graduate work completed more than three years previously is not counted.

REQUIREMENTS FOR THE DEGREE

PLANS OF STUDY

Two plans of study lead to the degree of Master of Arts. *Plan 1* requires a minimum of thirty hours of graduate credit, including a thesis carrying six hours of graduate credit. *Plan 2* requires a minimum of thirty-three hours of graduate credit, including the course in *Educational Research Methods and Procedures* carrying three hours of graduate credit.

SELECTION OF COURSES

Programs of study under *Plan 1* must include a minimum of twelve credit hours from third group courses in addition to the thesis. Under *Plan 2* a minimum of eighteen credit hours, in addition to the course in *Educational Research Methods and Procedures*, must be from third group courses.

Programs of study must include a minimum of twelve credit hours from courses offered in the Department of Education.

When programs of study include additional academic preparation in one or more teaching fields, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements of the Bachelor of Arts degree in the teaching field concerned.

RESIDENCE

Candidates for the degree of Master of Arts in Education must complete satisfactorily at this University a minimum of thirty credit hours, nine of which, with the approval of the adviser, may be in the College of General Studies off-campus courses.

THE THESIS

The thesis required under *Plan 1* must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean.

The thesis subject must be approved in writing by the candidate's adviser and recorded in the Office of the Registrar by the date an-

nounced in the University calendar. One typewritten original and two legible and complete carbon copies of the thesis in its final form (on official thesis paper) must be presented to the Dean by the candidate not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 46-47, and additional information will be supplied by the Dean.

Payment of tuition for the thesis will entitle the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period, it must be registered for again, and tuition paid on the same basis as for a repeated course.

COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a professional comprehensive examination in two parts: (1) a general examination concerned with an integrated understanding of the major areas in professional education, and (2) a special examination concerned with the candidate's area of specialization.

The general part of the comprehensive examination is divided into three groups as follows: Group I (Foundations) covers learning and teaching, society and the school, child growth and development, history of education, philosophy of education, and educational research; Group II (Major Levels) covers elementary education, secondary education, adult education, employee training, and vocational education; Group III (Common Elements) covers administration, curriculum, evaluation, guidance, methodology, and reading.

The candidate must be prepared to answer two questions in each group, none of which shall include his area of specialization.

FIVE-YEAR PROGRAM

A candidate entering the School of Education from the Junior College (or with equivalent preparation) may choose a three-year program leading to the degrees of Bachelor of Arts and Master of Arts in Education to be conferred simultaneously. The first year of this combined program will be devoted to teaching-field preparation; the work of the second year will include the Bachelor of Arts junior-year professional courses and a maximum of eighteen credit hours of graduate courses; that of the third and final year, senior-year undergraduate professional courses and the remaining graduate courses needed for the Master's degree. Observation and Student Teaching to be elected in the third year may not be taken for graduate credit. A quality-point index of

of Education and experienced administrators in the field, (2) an enlargement of the educational resources available to the student, (3) instructional procedures better adapted to the needs of part-time students, (4) more effective use of the student's work environment as a laboratory, and (5) an increase in the educational values accruing from doctoral research.

Further information concerning this program may be obtained from the Office of the School of Education.

THE SCHOOL OF GOVERNMENT

THE FACULTY AND STAFF OF INSTRUCTION •

†Arthur Edward Burns, Ph.D., *Dean of the School of Government*
Joe Lee Jessup, M.B.A., *Assistant Dean in the School of Government*

Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*

Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*

Warren Reed West, Ph.D., *Professor of Political Science*

Frank Mark Weida, Ph.D., *Professor of Statistics*

Harold Griffith Sutton, M.S., *Professor of Finance*

Mitchell Dreese, Ph.D., *Professor of Educational Psychology*

Ralph Dale Kennedy, Ph.D., *Professor of Accounting*

Wood Gray, Ph.D., *Professor of American History*

Thelma Hunt, Ph.D., M.D., *Professor of Psychology*

†Arthur Edward Burns, Ph.D., *Professor of Economics*

John Withrow Brewer, Ph.D., *Professor of International Law*

Harold Loran Geisert Ph.D., *Professor of Sociology*

Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*

Alan Thomas Deibert, A.M., *Professor of Romance Languages*

Donald Stevenson Watson, Ph.D., *Professor of Economics*

†Myron Law Koenig, Ph.D., *Professor of American History*

Arlin Rex Johnson, Ph.D., *Professor of Public Administration*

Everett Herschel Johnson, Ph.D., *Professor of Statistics*

Joe Lee Jessup, M.B.A., *Professor of Business Administration*

Robert Dale Campbell, Ph.D., *Professor of Geography*

Roderic Hollett Davison, Ph.D., *Professor of European History*

Henry Furness Hubbard, Ph.D., *Professorial Lecturer in Psychology*

Gerhard Colm, Dr. rer. pol., *Professorial Lecturer in Economics*

Orton Wells Boyd, A.M., C.P.A., *Professorial Lecturer in Accounting*

James Carlton Dockeray, Ph.D., *Professorial Lecturer in Business Administration*

Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*

Ralph Aubrey Young, M.B.A., Ph.D., *Professorial Lecturer in Economics*

†The President of the University, the Dean of Faculties of the University, the Dean of the School of Government, the Registrar of the University, the Director of Admissions of the University, Professors, Associate Professors, and Assistant Professors constitute the Faculty.
†On sabbatical leave spring term 1954-55.
†On leave of absence 1954-55.

- Karl Ernest Stromsem, Ph.D., *Professorial Lecturer on Public Administration*
- Jacques Jacobus Polak, Ph.D., *Professorial Lecturer in Economics*
- Joseph Leo Kreiger, M.B.A., *Professorial Lecturer in Business Administration*
- Edwin Lewis, M.B.A., *Professorial Lecturer in Accounting*
- Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*
- Eugene Fields, B.S., C.P.C.U., *Professorial Lecturer on Insurance*
- Fred Latimer Hadsel, Ph.D., *Professorial Lecturer in Political Science*
- Clarence McLaughlin, B.S., LL.B., *Professorial Lecturer in Accounting*
- Henry Alexander Berry, M.B.A., C.P.A., *Professorial Lecturer in Accounting*
- Forest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*
- Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*
- James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*
- Fernand Vincent Demaret, M.S., *Professorial Lecturer in Accounting*
- Harold Jerome Bobys, A.B., C.P.A., *Professorial Lecturer in Accounting*
- Harvey Porter Hall, A.M., *Professorial Lecturer in Political Science*
- John Jay Corson, Ph.D., *Professorial Lecturer in Business Administration*
- Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
- Antonio Alonso, A.M., *Associate Professor of Spanish*
- *Wolfram Karl Legner, Ph.D., *Associate Professor of German*
- Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Associate Professor of Political Science*
- Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
- Merle Talmadge Welshans, Ph.D., *Associate Professor of Business Administration*
- Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
- James Norman Mosel, A.M., *Associate Professor of Psychology*
- Rafael Supervia, Doctor en Derecho, *Associate Professor of Spanish*
- Gordon Gouverneur Barnewall, Ph.D., *Associate Professor of Business Administration*
- William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
- Ronald Bettes Thompson, A.B., *Assistant Professor of European History*
- James Coogan, Ph.D., *Assistant Professor of Economics*
- Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*
- Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*

* On sabbatical leave spring term 1954-55.

Walter David Fackler, A.B., *Assistant Professor of Economics*
 Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*
 Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
 Harland Walter Westermann, A.M., *Assistant Professor of Geography*
 Solomon Kullback, Ph.D., *Lecturer in Statistics*
 William George Torpey, Ph.D., *Lecturer on Public Administration*
 Sherman Cohen, A.B., LL.B., LL.M., *Lecturer in Business Administration*
 Joseph Patrick Murphy, A.B., LL.B., LL.M., *Lecturer in Political Science*
 John Samuel Myers, Ph.D., *Lecturer on Public Administration*
 Augustus Clark Johnson, A.M., *Lecturer in Business Administration*
 Harold Seidman, Ph.D., *Lecturer on Public Administration*
 Chester Hayden McCall, Jr., A.M., *Instructor in Statistics*
 Wilbur Earle Benson, M.B.A., *Instructor in Accounting*

COMMITTEES*

THE DEAN'S COUNCIL†

1955

Arlin Rex Johnson
 Merle Talmadge Welshans

1956

Wilson Emerson Schmidt
 Ralph Dale Kennedy

1957

Gordon Gouverneur Barnewall
 Richard Catlin Haskett

COMMITTEE ON ADMISSION AND ADVANCED STANDING

The Dean of the School, *Chairman*

Harold Griffith Sutton, *Secretary*

Ralph Dale Kennedy

Donald Stevenson Watson

Frank Mark Weida

EXECUTIVE COMMITTEE, BUREAU OF BUSINESS
 AND ECONOMIC RESEARCH

The Dean of the School, *Chairman*

The Assistant Dean

Ralph Dale Kennedy
 Everett Herschel Johnson

Donald Stevenson Watson
 Merle Talmadge Welshans

* The President of the University and the Dean of the School of Government are members ex officio of all committees.
 † Elected by the Faculty.

COMMITTEE ON DOCTORAL STUDIES**The Dean of the School, *Chairman*****The Assistant Dean**

Richard Norman Owens
 Donald Stevenson Watson
 Merle Talmadge Welshans

Ralph Dale Kennedy
 Everett Herschel Johnson
 Gordon Gouverneur Barnewall

GENERAL INFORMATION**INTRODUCTORY**

The George Washington University has provided training in both foreign service and governmental theory and administration throughout its history. This was one of its purposes when chartered in 1821. The School of Government was established in 1928 to bring together in various undergraduate and graduate curricula the work offered in foreign service and much of the other academic work in the theory and administration of government.

It is the purpose of the School to give the student an understanding of his responsibilities under the Constitution of the United States in the conduct of public office—domestic and foreign, and to prepare students for careers not only in governmental service but also in related business and professional fields. This can be accomplished not through any single course but through curricula which correlate social, economic, political, historical, business, and psychological studies.

The program embraces both graduate and undergraduate work. Curricula, leading to the degree of Bachelor of Arts in Government are offered in Foreign Affairs, Accounting, Business Administration, and Business and Economic Statistics. Graduate work leading to a Master's degree is available in each of these fields and in Economic Policy, Public Administration, Personnel Administration, Counseling, and Psychometrics. Graduate study leading to the degree of Doctor of Business Administration is also available (see pages 181-82).

The Foreign Affairs program is broad, covering international political relations, international trade and finance, international communications, and regional studies. Its purpose is to equip students, by providing general background and specialized work, for careers in the field of American foreign relations. The diplomatic service of the United States, the several agencies of government with responsibilities in the international field, the international organizations, and American enterprise abroad offer opportunities in this field.

Governmental service requires special training and background in many other subjects, including economic research, statistical investigation, ac-

counting, administrative management, and personnel administration. The academic background for such work is offered in the various curricula of the School and is described below.

REGULATIONS

Students in the School of Government are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26, and the University regulations stated on pages 42-49.

AMOUNT OF WORK

A full-time student not on probation may take ordinarily not more than seventeen credit hours. A student employed more than twenty-four hours a week, who is not on probation, may take not more than ten credit hours.

A full-time undergraduate student whose quality-point index is 3.50 or higher may take not more than nineteen credit hours. An undergraduate student employed more than twenty-four hours a week, whose quality-point index is 3.50 or higher, may take up to twelve credit hours. Exception to these rules will require the approval of the Dean.

ATTENDANCE

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

CLASSIFICATION OF STUDENTS

A student who holds an Associate in Arts degree from the Junior College or the equivalent from another accredited institution, and who has registered his choice of one of the prescribed curricula at the Office of the Registrar, is classed as a *junior*. A student who has completed thirty credit hours in the School of Government is classed as a *senior*. A student who has satisfactorily completed the work for a Bachelor's degree and who has registered his choice of one of the prescribed fields of study at the Office of the Registrar, is classed as a *master in course*.

INDEPENDENT STUDY PLAN

Under the independent study plan a student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the division in which the subject falls. Credit under this plan is limited to the specific course credits as designated in the list of courses of instruction in this CATALOGUE.

THE DEGREE OF BACHELOR OF ARTS IN GOVERNMENT

Upon the satisfactory completion of the undergraduate requirements of the School of Government, the degree of Bachelor of Arts in Government, with a designation of the major field of study, is conferred. The major fields are Foreign Affairs, Accounting, Business Administration, and Business and Economic Statistics.

Students who have a special need for integrating courses from several departments or from more than one major field may request approval by a faculty committee, of a special major program. The same rules and regulations will apply as in the regularly offered majors.

Requirements for the undergraduate major in Economics and Public Administration are stated under the departments of Economics and Political Science, respectively.

REQUIREMENTS FOR THE DEGREE

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 42 and 43.

In order to graduate, a student must have the following: (1) a quality-point index in all of his work of at least 2.00, and (2) a quality-point index of at least 2.50 in his major. The major includes the required courses and courses taken in the group options.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation, where he will remain as long as his quality-point index is below 2.00.

Suspension.—A student who has a quality-point index below 1.50 or who is placed on probation for a third term, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing, that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

A student with a limited schedule is affected by the foregoing scholarship rules only when he has undertaken fifteen credit hours.

CURRICULUM REQUIREMENTS

For recommendation for graduation the School of Government requires, in addition to the appropriate Junior College work (see curricula

on pages 66 and 67), a minimum of sixty credit hours during the junior and senior college years, as set forth in one of the following curricula:

Foreign Affairs

	Credit Hours
Econ. 181-82... International Economics.....	6
Hist. 150... European Diplomatic History Since 1871.....	3
or Pol. Sc. 171... International Politics.....	3
Hist. 181-82... Diplomatic History of the United States.....	6
Pol. Sc. 172... International Organization: the United Nations.....	3
Pol. Sc. 181-82 International Law.....	6
Foreign Language ....Composition and Conversation.....	6
Geography	3
Group Option... (To be selected from one of the following groups).....	18
Electives (To be selected in consultation with adviser).....	9
Total.....	60

All foreign affairs majors must complete the *required* courses listed above. The group option provides specialization in international politics, international economics, international communications, or a geographic region, depending upon the student's interest. Normally no more than six credit hours may be taken in an option other than the one selected. Consent of the adviser must be obtained for such modification of the option selected.

Group I—International Politics

This group option (18 credit hours as noted in list above) is composed of courses in the departments of Political Science, History, and Geography which are related to the study of American diplomatic relations. The selection of courses must be made in consultation with the adviser.

Group II—International Economic Relations

This group option (18 credit hours as noted in list above) is composed of courses offered primarily by the departments of Economics and Business Administration which are related to the study of American economic, financial, and business relationships with foreign countries. The selection of courses must be made in consultation with the adviser.

Group III—International Communications

This group option (18 credit hours as noted in list above) is composed of courses offered primarily by the departments of Political Science, Psychology, Sociology, and Journalism which are related to the study of international information programs, public opinion, psychological warfare, cultural relations and public relations. (It is recommended that the student include statistics in his Junior College program.) The selection of courses must be made in consultation with the adviser.

Group IV—Area or Regional Studies

This group option (18 credit hours as noted in list above) may be selected from courses offered in the departments of Economics, History, Political Science, and Geography, dealing with a geographic region such as Europe, Latin America, or the Pacific Area. This selection must be approved by the adviser.

		Credit Hours
Business Administration		
Bus. Adm. 101.....	Business Organization and Combination.....	3
Bus. Adm. 102.....	Business Management.....	3
Bus. Adm. 105.....	Personnel Management in Industry.....	3
Bus. Adm. 131.....	Business Finance.....	3
Bus. Adm. 141.....	Principles of Marketing.....	3
Bus. Adm. 198.....	Problems in Business Management.....	3
Acct. 155.....	Business Budgeting.....	3
Econ. 121.....	Money and Banking.....	6
Pol. Sc. 127-28.....	Commercial Law.....	30
Group Option (to be selected from one of the following groups).....		15
Electives (to be selected in consultation with the adviser).....		15
Total.....		60

All Business Administration majors must complete the *required* courses listed above. The group options shown below provide specialization in several aspects of business. Selection of the option and the courses (15 credit hours) to be taken in it must be made in consultation with the adviser. Normally no more than 6 credit hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

This group option is made up of selected courses offered by the departments of Accounting, Business Administration, Economics, and Statistics.

Group II—Personnel Management

This group option is made up of selected courses offered by the departments of Business Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

This group option is made up of selected courses offered by the departments of Accounting, Business Administration, Economics, Political Science, and Statistics.

Group IV—Marketing

This group option is made up of selected courses offered by the departments of Business Administration, Economics, Geography, and Statistics.

Group V—Controllershship

This group option is made up of selected courses offered by the departments of Accounting, Business Administration, and Economics.

Group VI—Economics

This group option is made up of selected courses offered by the departments of Economics and Business Administration.

Group VII—Statistics

This group option is made up of selected courses offered by the Department of Statistics.

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major excludes some of the above required courses and adds others.

such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

Accounting

Credit
Hours

Acct. 101.....	Cost Accounting.....	3
Acct. 111.....	Financial Statement Analysis.....	3
Acct. 121-22.....	Intermediate Accounting.....	6
Acct. 171.....	Auditing.....	3
Bus. Adm. 102.....	Business Management.....	3
Bus. Adm. 131.....	Business Finance.....	3
Econ. 121.....	Money and Banking.....	3
Pol. Sc. 127-28.....	Commercial Law.....	6
		10
Group Option (to be selected from one of the following groups).....		15
Electives (to be selected in consultation with the adviser).....		15
Total.....		60

All Accounting majors must complete the *required* courses listed above. The group options shown below provide specialization in public accounting, commercial and industrial accounting, and governmental accounting and budgeting. Selection of the option and the courses (15 credit hours) to be taken in it must be made in consultation with the adviser.

Group I—Public Accounting

This group option is made up of selected courses offered by the departments of Accounting, Business Administration, and Political Science.

Group II—Commercial and Industrial Accounting

This group option is made up of selected courses offered by the departments of Accounting, Business Administration, Economics, and Statistics.

Group III—Governmental Accounting and Budgeting

This group option is made up of selected courses offered by the departments of Accounting, Business Administration, Political Science, and Economics.

Business and Economic Statistics

Credit
Hours

Stat. 111.....	Business and Economic Statistics I.....	3
Stat. 112.....	Business and Economic Statistics II.....	3
Stat. 117.....	Analysis of Variance.....	3
Stat. 118.....	Correlation and the Chi-Square Test.....	3
Stat. 195-96.....	Reading and Research in Business and Economic Statistics.....	6
Bus. Adm. 101.....	Business Organization and Combination.....	3
Bus. Adm. 102.....	Business Management.....	3
Econ. 101-2.....	Economic Analysis.....	6
Econ. 105.....	Business Cycles.....	3
Phil. 121-22.....	Logic and Scientific Method.....	6
Electives (A).....	(To be selected from Statistics).....	6
Electives (B).....	(From Accounting, Business Administration and Economics in consultation with the adviser).....	15
Total.....		60

EXAMINATIONS FOR WAIVING CURRICULUM REQUIREMENTS

A student desiring to omit a required course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum requirement in that subject and may qualify for registration in an advanced course. Passing of this examination does not entitle the student to any hours of credit toward the degree. A student desiring to take such examinations should make the request of the Dean and pay the required fee.

THE MASTER'S DEGREES

Upon the satisfactory completion of the graduate requirements of the School of Government, one of the following degrees is conferred: (1) Master of Arts in Government with a major in Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, or Psychometrics; (2) Master of Arts in Public Administration in the fields of General Administration and Governmental Fiscal Administration; (3) Master of Arts in Personnel Administration; (4) Master of Business Administration.

ADMISSION TO CANDIDACY

A student is formally recognized as a candidate for the Master's degree only when his application for candidacy has been approved.

A 3.00 average in the undergraduate major is normally required for admission to graduate study.

The candidate for the Master's degree who is deficient in undergraduate preparation may take a comprehensive examination on his undergraduate major field. Passing of this examination entitles the student to admission without taking specific courses to make up his deficiencies.

In courses taken to satisfy undergraduate deficiencies, the student must maintain at least a 3.00 average to be eligible for admission to graduate study.

Candidates for the Master of Arts degree in Foreign Affairs, or in Economic Policy must show a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. Such examination should be taken before the student begins the second 15 hours of his work.

REQUIREMENTS FOR THE DEGREES

A minimum of thirty credit hours of work, as outlined in the curricula on pages 176-80, must be completed successfully. Variations from these curricula require the permission of the Dean.

No part of the minimum requirements may be taken in any other institution.

A second-group course (numbered 101-200) may be counted toward the Master's degree only when registration for advanced credit has been approved at the beginning of the course by the Dean and by the officer of instruction, and provided that the student has done such extra work in the course as may be prescribed by the instructor.

All work for the degree of Master of Arts in Government or Master of Business Administration must be completed in three years, unless an extension of time is granted by the Dean's Council. Validation examinations may be required.

In addition to the course examinations, the candidate must pass a comprehensive written examination in his major field. An oral examination on his thesis may also be required.

No work counted toward a Bachelor's degree may be counted toward a Master's degree.

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree will be assisted in planning his program so that he can qualify for admission to candidacy for the Doctorate.

RESIDENCE

No credit is granted for work done in absentia, i.e., without formal instruction, except for the thesis, which may be completed in absentia with the permission of the department concerned.

SCHOLARSHIP

A student whose scholarship is unsatisfactory may be suspended by the Dean. Grades for graduate work are Excellent, Satisfactory, and Unsatisfactory; for further details, see page 43.

CURRICULUM REQUIREMENTS

A normal program includes a minimum of twenty-four credit hours of course work and the thesis (six credit hours), to be selected from the courses listed under the chosen major field, and such other courses as may be necessary. Programs should be prepared in advance in consultation with the adviser and submitted to the Dean on the appropriate form; if the program is not completed at the time of registration this must be attended to not later than one month following registration.

THE THESIS

Students who plan to complete work for a Master's degree in one year should register for the thesis at the beginning of the year; other-

wise the thesis should be registered for not later than the beginning of the final year. The choice of the thesis subject must be approved by the professor in charge and recorded in the Office of the Registrar by the date announced in the University calendar. The typewritten thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student not later than the date announced in the University calendar. Requirements in regard to the form of the thesis are stated on pages 46-47, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period, it must be registered for again, and tuition paid on the same basis as for a repeated course.

MASTER OF ARTS IN GOVERNMENT

This degree is offered in six different curricula which are described below.

Students who have a special need for integrating courses from two or more of the major fields of concentration for the degree of Master of Arts in Government may request approval, by a faculty committee, of a special major program. All rules and regulations for the degree of Master of Arts in Government will apply to such special programs.

FOREIGN AFFAIRS

Prerequisite: an undergraduate major in foreign affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in foreign affairs must be made up.

The program in Foreign Affairs is offered in four fields of specialization: International Economics, International Politics, International Communications, and Regional Studies.

International Economics.—Graduate courses in economics (numbered 200 and over) in the field of international trade, the balance of payments, international financial policies, and international economic policies form the principal part of this specialization. Graduate courses in economic theory are recommended. Other courses may be included with the consent of the adviser.

International Politics.—Graduate courses in political science and history (numbered 200 and over), in international law, international politics, international organization, diplomatic history, and American foreign policy, comprise the principal requirements for this specialization. Related courses may be added with the consent of the adviser.

International Communications.—Graduate courses (numbered 200 and over) in political science, psychology, sociology, and geography with 12 hours (concluded)

the course work) in the fields of public opinion, international information, psychological warfare, and communications, and 12 hours (one-half of the course work) in the fields of international politics and area studies. The adviser in all cases must approve the course selections.

Regional Studies.—Graduate courses in economics, political science, history, and geography (numbered 200 and over) dealing with a geographic region, such as Latin America, Europe, or the Pacific Area, comprise the principal requirements. Other courses of broader scope in economics, history, and political science are recommended as part of the program. The adviser in all cases must approve such selections.

The listing of graduate courses for these fields of specialization is given in the departmental offerings for Economics, History, Political Science, Geography, Psychology, and Sociology.

ECONOMIC POLICY

Prerequisite: an undergraduate major in economics or the equivalent.

Graduate courses in economics required: Economic Policy—Economics 265-66. Recommended: courses in income and employment, national income, business cycles, monetary and fiscal policy, economic theory, and statistics. These courses and others that may be appropriate are to be selected with the consent of the adviser.

ACCOUNTING

Prerequisite: an undergraduate major in accounting or the equivalent. The program in Accounting requires the following courses:

Acct. 231.....	Contemporary Accounting Theory.....	3
Acct. 272.....	Auditing Practice	3
Acct. 295-96.....	Seminar in Accounting.....	6
Bus. Adm. 231.....	Corporate Financial Problems.....	3

The remaining nine hours of course work are to be selected from courses in or related to accounting with the approval of the adviser.

BUSINESS AND ECONOMIC STATISTICS

Prerequisite: an undergraduate major in business and economic statistics, or the equivalent; such work must include a minimum of 24 credit hours of second-group courses in statistics and a minimum of 18 credit hours in second group courses in accounting, business administration, and economics.

The Master of Arts program requires at least 12 credit hours of graduate courses in statistics. The remaining 12 credit hours are to be selected from graduate work offered by the departments of Accounting, Business Administration, Economics, and Statistics with the approval of the adviser.

COUNSELING

Prerequisite: an undergraduate major in psychology, business administration, or education; or an undergraduate major in the social sciences appropriate to specialization in this field. The undergraduate background should include necessary basic training in such fields as psychology, sociology, statistics, labor economics, and business management or public administration.

The Master of Arts program in Counseling requires the following courses:

Psychology	220.....	Seminar: Abnormal Psychology	3
or			
Psychology	225.....	Seminar: Mental Hygiene.....	3
Psychology	227.....	Seminar: Counseling and Guidance.....	3
Psychology	228.....	Seminar: Techniques of Counseling.....	3
Psychology	229.....	Seminar: Occupational and Educational Information.....	3
Psychology	236.....	Seminar: Analysis of the Individual for Purposes of Counseling.....	3

The remaining nine hours are elective, with the approval of the adviser.

PSYCHOMETRICS

Prerequisite: an undergraduate major in psychology, statistics, or the social sciences which includes twelve credits in psychology (general psychology, tests and measurements, personnel psychology, and related psychology courses); general statistics; mathematics through college algebra (preferably through calculus).

The Master of Arts program in Psychometrics requires the following courses:		
Psychology	231.....	Test Construction..... 3
Psychology	234.....	Seminar: Test Theory..... 3
Psychology	246.....	Seminar: Personnel Measurement Techniques..... 3
Statistics	105.....	Statistics in Psychology and Education..... 3
Statistics	117.....	Analysis of Variance..... 3
Statistics	118.....	Correlation and the Chi Square Test..... 6
Psychology	299-300..	Thesis..... 6

The remaining six hours are elective, with the approval of the adviser.

MASTER OF ARTS IN PUBLIC ADMINISTRATION

The purpose of the program for the degree of Master of Arts in Public Administration is to prepare graduates to enter public service in the field of administration and to advance the professional competence of graduates already in public employment. The major fields are General Administration and Governmental Fiscal Administration.

GENERAL ADMINISTRATION

Prerequisite: an undergraduate background in the social sciences appropriate to specialization in this field.

The program in General Administration requires Political Science 265-66, *Workshop in Public Administration*, and eighteen additional graduate credits to be selected from the following, with the approval of the adviser:

Econ.	266.....	Problems in Governmental Economic Policy..	3
Pol. Sc.	209-10.....	Seminar: The Federal Government of the United States.....	6
Pol. Sc.	213.....	Readings in Comparative Government.....	3
Pol. Sc.	226.....	Problems of Governmental Reorganization.....	3
Pol. Sc.	239-40.....	Principles and Problems of Personnel Administration.....	6
Pol. Sc.	253.....	Staff Functions in Government Administration.....	3
Pol. Sc.	255.....	Administrative and Organization Theories and Problems.....	3

Pol. Sc. 257.....	Public Policy Formulation and Administration	3
Pol. Sc. 258.....	Public Relations in Government Administration	3
Pol. Sc. 260.....	Administration of Major Governmental Programs	3
Pol. Sc. 262.....	Reading and Conference Course in Public Administration	3
Pol. Sc. 263-64.....	Analysis of the Administrative Process	6
Pol. Sc. 268.....	Government Corporations	3

GOVERNMENTAL FISCAL ADMINISTRATION

Prerequisite: an undergraduate background in the social sciences with emphasis on economics and business administration.
The program in Governmental Fiscal Administration requires Political Science 254-46, Workshop in Public Administration, and eighteen additional graduate credits selected from the following, with the approval of the adviser:

Acct. 246.....	Governmental Accounting and Budgeting Problems	3
Bus. Adm. 291-92....	Seminar in Business Management	6
Bus. Adm. 295.....	Controllorship in the Federal Service	3
Bus. Adm. 296.....	Seminar in Controllorship	3
Econ. 223-24.....	Monetary Policy and Central Banking	6
Econ. 261-62.....	Public Finance and Fiscal Policy	6
Econ. 266.....	Problems of Governmental Economic Policy	3
Pol. Sc. 251-52.....	Budget Formulation and Execution	6
Pol. Sc. 253.....	Staff Functions in Government Administration	3
Pol. Sc. 255.....	Administrative and Organization Theories and Problems	3
Pol. Sc. 257.....	Public Policy Formulation and Administration	3
Pol. Sc. 258.....	Public Relations in Government Administration	3
Pol. Sc. 268.....	Government Corporations	3

MASTER OF ARTS IN PERSONNEL ADMINISTRATION

The purpose of the program for the degree of Master of Arts in Personnel Administration is to train graduates in personnel management techniques and problems. While the emphasis is placed on governmental personnel work, the curriculum may be adapted to the interest of graduates who plan a career in personnel relations in business.

Prerequisite: an undergraduate major in the social sciences, business administration, or education, coupled with courses in personnel psychology, social psychology, or abnormal psychology.

The program requires twenty-four graduate credits, in general developed from the following, with the approval of the adviser:

Bus. Adm. 105.....	Personnel Management in Industry	3
Bus. Adm. 126.....	Problems in Personnel Management	3
Bus. Adm. 291-92....	Seminar in Business Management	6
Econ. 241.....	Labor Economics	3
Econ. 244.....	Labor Relations	3

Pol. Sc. 239-40.....	Principles and Problems of Personnel Administration	6
Psych. 244.....	Seminar: Job Analysis and Evaluation.....	3
Psych. 245.....	Employee Motivation and Morale.....	3
Psych. 246.....	Seminar: Personnel Measurement Techniques.....	3
Elective.....	(From Business Administration, Economics, Political Science, Psychology).....	6

MASTER OF BUSINESS ADMINISTRATION

This curriculum provides the graduate student with the general and specialized training which will help him advance to responsible positions in business. Business training is also essential for many positions in government service and the program offers such training.

Normally, a student with an acceptable (B average) undergraduate major in Business Administration, or the equivalent, can complete the work for the Master of Business Administration in one year. All such programs must be approved by the adviser. Students with course deficiencies, but with good academic records will be admitted to study for the Master of Business Administration and will be required to take up to 60 credit hours of work for this degree. The amount of work over and above 30 credit hours, and the courses to be taken, will be determined by the adviser, with the approval of the Dean.

Graduate course work in Business Administration is listed on pages 229-30. The Master of Business Administration program, with the approval of the adviser, may include certain graduate courses from other departments, such as Economics, Accounting, and Statistics.

DOCTOR OF BUSINESS ADMINISTRATION

The work for this degree is under the supervision of the Committee on Doctoral Studies of the School of Government.

An applicant must have the degree of Master of Business Administration, Master of Arts in Business Administration, or Master of Arts in a related field, or the equivalent of such degrees, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence in Statistics and Accounting, either by qualifying examinations or acceptable university credits in these subjects. He must satisfy this requirement in at least one of the two subjects before his application to study for the degree of Doctor of Business Administration will be considered.

After admitting an applicant, the Committee on Doctoral Studies, in consultation with the applicant, will designate six fields of study and appoint an adviser to guide the student in his work in these fields. As part of this work, the student must complete a minimum of thirty credit

hours in graduate courses. Additional course work may be prescribed by the adviser.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination, this Examination will be scheduled.

The General Examination is a written comprehensive on fields of study not limited to the subject matter of courses taken in these fields. Two fields of study are required of all applicants: Economic Theory and Business and Economic History. The four additional fields, selected by the Committee and the applicant, will be drawn from the following list: Marketing, Organization and Management, Business Finance and Investments, Personnel Management, Public Administration, Accounting Theory, Money and Banking, Statistics, Risk and Risk Bearing, Transportation and Traffic Management, and such others as the Committee may designate.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

The Final Examination of the candidate consists of his oral defense of the dissertation. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration by the Committee on Doctoral Studies.

SPECIAL PROGRAMS

The School of Government offers the Navy Graduate Comptrollership program for Naval officers sponsored by the Naval Post Graduate School. In cooperation with the College of General Studies, the School of Government is conducting the Air Force Manpower Management Training Program, sponsored by the Department of the Air Force.

The School of Government cooperates with the College of General Studies in the off-Campus program of that College, particularly in the fields of controllership, governmental administration, and personnel administration.

The Department of Business Administration offers work in the field of property and casualty insurance as part of the educational program of the American Institute for Property and Liability Underwriters, Inc.

FOREIGN SERVICE REVIEW COURSE

The School of Government is continuing to offer its summer Foreign Service Review Course, started in 1946, for persons interested in pre-

paring for the written Foreign Service Examination given by the Department of State.

Since this Course is primarily an intensive review of college work already completed, and is offered as a service to the superior graduate student who wishes to prepare for the written Foreign Service Examination, no academic credit will be given.

Subjects to be reviewed during the 1954 Course will include the following: American history, American government, comparative government, European history, principles of economics, geography, general statistics, English composition, reading comprehension, vocabulary, and contemporary affairs.

For further details, including authorization by the Department of State, admission requirements, fees, and living accommodations, address The Director, Foreign Service Review Course, School of Government.

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau, an established part of the School of Government, conducts research in both the fields of business and economics. This work is under the direction of the Executive Committee of the Bureau of Business and Economic Research. Special attention is given to problems of the metropolitan area of Washington, D. C. Research projects are also sponsored by public and private agencies. Both faculty and students of the School of Government participate in the activities of the Bureau of Business and Economic Research. Results of research activities as well as abstracts of selected Masters' theses are reproduced and disseminated by the Bureau.

THE COLLEGE OF GENERAL STUDIES

Mitchell Dreese, Ph.D., *Dean of the College of General Studies*
John Francis Latimer, Ph.D., *Assistant Dean of the College of General Studies*
Grover La Marr Angel, Ed.D., *Director of the Off-Campus Division*
Mary Ellen Coleman, A.M., *Director of the Reading Clinic*
Karl Ernest Stromsem, Ph.D., *Adviser on Government Intern Scholarships*
Leonard Walton Vaughan, A.M., *Director of the George Washington Counseling Center*

THE DEAN'S COUNCIL •

Benjamin Douglass Van Evera Ralph Windsor Ruffner
Arlin Rex Johnson

GENERAL INFORMATION

INTRODUCTORY

The College of General Studies of The George Washington University, established in 1950, is designed primarily to supplement the adult education opportunities previously available at the University. It includes the following divisions: (1) the Off-Campus Division; (2) the Campus Division; and (3) the Division of Community Services.

OFF-CAMPUS DIVISION

In recent years, employee in-service training has been increasingly emphasized in government, education, business, and industry. Service personnel in nearby military and naval installations have likewise been increasingly interested in off-duty education as a means of working toward academic degrees and increased professional proficiency. The Off-Campus Division of the College of General Studies works closely with personnel administrators, training officers, school officials, and others interested in developing programs of in-service training and brings the educational resources of the University to bear on such programs. Credit and non-credit courses are organized in any field in which there is sufficient demand and for which instructional facilities can be made available. These courses meet at the time and place most convenient for the student.

• The President of the University, the Dean of Faculties of the University, and the Dean of the College are members ex officio of the Council.

dents enrolled and may begin at any time of the year. Credit courses are accepted by any school or college of the University provided (1) the student is accepted for degree candidacy in that school or college; (2) the courses in question are within the scope of the curriculum requirements; and (3) the maximum number of credit hours which can be taken in any school or college of the University other than that in which the student is a degree candidate is not exceeded. Credit courses may also be transferred to other colleges and universities.

Admission to Course Work

Admission to an off-campus course does not constitute admission to degree candidacy or to a campus division of the University.

A simplified procedure for admission and registration in off-campus courses is conducted at or prior to the first meeting of the class. Transcripts of previous academic work are not required. Registration in credit courses is restricted to those whose qualifications indicate that they are able to complete the course successfully. In general, off-campus non-credit courses are open to any individual interested in enrolling. However, when a course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

Admission to Degree Candidacy

In agencies and service installations where there is sufficient enrollment to permit offering the necessary range of courses, it is possible to earn the Associate in Arts, Bachelor of Arts, or Master of Arts degrees, without campus study. For further information, see the bulletin of the College of General Studies.

CAMPUS DIVISION

This Division has been established in recognition of the fact that there are adults, well qualified to undertake a particular program of college work, whose academic preparation would not ordinarily qualify them for admission to a previously established school or college of the University, without considerable prerequisite work. It is also recognized that an adult, through his work experience, may have gained competency in some particular area of learning. This knowledge may be validated by special examinations to entitle him to advanced standing toward a degree. For further information, see the bulletin of the College of General Studies.

DIVISION OF COMMUNITY SERVICES

This Division was organized to provide needed auxiliary educational services and to promote programs designed to supplement the formal educational offerings of the University.

Non-credit courses in a wide variety of subject fields will be set up at the request of any interested group. There will be no entrance requirements. The length of each course will be determined by the wishes of the sponsoring group and the nature of the subject to be studied.

The George Washington University Reading Clinic offers both diagnostic and corrective work for small groups or individuals and reading improvement techniques for small classes. All courses are designed to meet particular individual needs whether on a remedial basis or for accelerated reading comprehension.

The Government Management Intern Scholarship Program offers annually fifty scholarships to assist federal agencies in training carefully selected young men and women for administrative leadership in the government career service. Each scholarship provides a tuition-free course of three credit hours a term and appropriate academic credit (up to six credit hours) for the successful completion of training assignments required in any agency program which has been evaluated by the University.

The George Washington Counseling Center offers counseling programs designed to assist individuals in making vocational and educational plans. The services offered include the following: (1) aid in vocational choice; (2) checking present training objectives; (3) diagnosis of academic difficulties; (4) determining suitability of present job; and (5) assistance in understanding individual's abilities, aptitudes, and interests.

FEES

The tuition fee for off-campus credit courses in other than service installations for service personnel is \$12 per credit hour. Through a contractual relationship with nearby naval and military installations, it has been possible to offer instruction to service personnel in these installations at the reduced tuition rate of \$30 per three-credit course. However, in service installations located more than 30 miles from the campus, in order to cover the additional expense of the instructors' travel it is necessary to charge a tuition of \$12 per credit hour. The fees for non-credit courses and eight-week credit courses are payable in full at the first meeting of the course. By special arrangement in fifteen-week credit courses, payments may be made in three equal installments.

THE DIVISION OF UNIVERSITY STUDENTS

Elmer Louis Kayser, Ph.D., LL.D., *Dean of the Division of University Students*

John Gage Allee, Jr., A.M., *Assistant Dean of the Division of University Students*

THE DEAN'S COUNCIL •

Ralph Dale Kennedy

Francis Edgar Johnston

Ira Bowers Hansen

GENERAL INFORMATION

INTRODUCTORY

The Division of University Students was established in 1930. In this Division are registered mature students who wish to undertake University courses for credit either here or elsewhere or as auditors, but who are not at this time working toward degrees in this University.

REGULATIONS

Students in the Division of University Students are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26; the University regulations stated on pages 42-49; and the regulations concerning PROBATION, SUSPENSION, AND WARNINGS which are the same as those stated on pages 60 and 61 under the Junior College.

TRANSFER TO REGULAR STATUS

A "University student" may be transferred, at his request, to another college or school of the University only upon complying with the regulations of the specific college or school to which he wishes to transfer. The student should familiarize himself with the regulations printed in the University CATALOGUE concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfers within the University on page 44 and regarding graduation requirements on pages 46-47, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

• The President of the University, the Dean of Faculties of the University, and the Dean of the Assistant Dean of the Division are members ex officio of the Council.

THE DIVISION OF SPECIAL STUDENTS

Warren Reed West, Ph.D., *Dean of the Division of Special Students*

THE DEAN'S COUNCIL •

Carl Hugo Walther

Thelma Hunt

Fred Salisbury Tupper

GENERAL INFORMATION

INTRODUCTORY

The Division of Special Students was organized in 1944. To this Division may be admitted students who are in the process of qualifying for degree candidacy. Students in this Division are designated "special students".

REGULATIONS

Students in the Division of Special Students are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES stated on pages 12-26; and the University regulations stated on pages 42-49.

SCHOLARSHIP

A student in this Division may be dropped for reasons of scholarship at any time his quality-point index falls below 2.00.

The system of grading and computing scholarship is described in detail on pages 42 and 43.

ACADEMIC SCHEDULE

The schedule of the "special student" is made up of courses required in the curriculum to which he wishes to transfer. The choice of courses must be approved by the Dean. If the student has not completed the language requirements of this curriculum at the time of his admission to the University, he must include three hours of language in each twelve hours of work until this requirement is met. Second- or third-group courses may not be taken unless all first-group requirements have been met or are being met concurrently.

Credits earned at other institutions are evaluated at the time of ad-

* The President of the University, the Dean of Faculties of the University, and the Dean of the Division are members ex officio of the Council.

mission to this Division. They are withheld until the Special Student transfers to a degree-granting college or school, when those appropriate to his curriculum are applied toward advanced standing.

In each individual case, the schedule will be reduced when it is deemed advisable.

TRANSFER TO REGULAR STATUS

A "special student" may transfer to a degree-granting college or school of the University when he has satisfactorily completed his program in the Division of Special Students and has met the admission requirements of the college or school to which he wishes to transfer. The student should familiarize himself with regulations printed in the University CATALOGUE concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfers within the University on page 44 and regarding graduation requirements on pages 46-47, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

ADVISORY SYSTEM

Students in the Division of Special Students are expected to consult with an adviser in the Office of the Dean at least once each term. Any student who has a question in regard to his status, or whose grades are below C, or who is in academic difficulty, is urged to make an appointment promptly without waiting for a request from the Dean.

DIVISION OF AIR SCIENCE

Carl Swyter, B.S. in E.E., Colonel, United States Air Force, *Director of Air Science*

COMMITTEE ON MILITARY SERVICE DELAY AND SELECTION FOR THE ADVANCED COURSE *

Robert Kenyon Schubert, *Chairman*

Fred Everett Nessell

Gregory Denis Picone

Calvin Lee Frederick, *Recorder*

GENERAL INFORMATION

INTRODUCTORY

The Air Force Reserve Officers' Training Corps (Air Force ROTC) unit was established at the University in 1951 under authority of Section 40-47C, National Defense Act of June 3, 1916, as amended. Air Force personnel, approved by the President of the University, are detailed by the Department of the Air Force to supervise and instruct the Air Force ROTC cadets.

The mission of the Air Force ROTC program is to select and prepare students through a permanent program of instruction to serve as commissioned officers in the Regular and Reserve components of the United States Air Force. Classroom instruction and leadership training is provided to develop in the student the knowledge and the attributes of character, personality, and leadership required of officers in the United States Air Force. Emphasis is placed on arousing in the student a desire to serve his country as a flying officer.

COURSE OF STUDY

The course of study is divided into a basic course covering the first two years and an advanced course covering the junior year, summer camp, and senior year. Twenty hours of elective credit earned in this program may be applied toward a degree. Two hours a term for the basic course and three hours a term for the advanced course.

The program takes into consideration the fact that many of the academic subjects in which college students are enrolled have a direct rela-

* The President of the University, the Dean of Faculties of the University, and the Director of the ROTC are members ex officio of this Committee.

tionship to a military career as well as to a civilian career. The courses of the Air Force ROTC program have been carefully selected to supplement those academic subjects. They also afford a means for practical training in organization, leadership, and discipline, which will be of value in industrial or professional careers. The duties and responsibilities of squadron level officers, oral and written expression, and the techniques of problem solving are emphasized throughout the course both in theory and practice. Even those students who are not selected for the advanced course or for commissioning will have received military training of value to the Nation and to themselves.

See "Department of Air Science" for a list of the subjects covered. In addition thereto, orientation flights, simulated flights in Link Trainer, and field trips to nearby Air Force bases are available to selected cadets on a voluntary basis.

ELIGIBILITY REQUIREMENTS

Membership in the Air Force ROTC Unit is open to any regularly enrolled full-time, male student between the ages of 14 and 25, who is a citizen of the United States, physically qualified, of good character, and a candidate for a Bachelor's degree. Students who successfully complete the basic course or have equivalent active military training may be selected to enter the advanced course. Students in the advanced course receive from the Government a subsistence allowance of approximately \$500, which is exempt from income tax. During the period of the summer camp the advanced student receives, in addition, \$75 a month, plus food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses.

A student enrolling in the basic course must agree to complete the two-year course as a prerequisite to graduation from the University. A student if selected for enrollment in the advanced course, must sign a contract to complete the course as a prerequisite to graduation; attend a four- to six-week summer camp; to accept a Reserve commission for an indefinite term, if and when tendered; and to serve a period of two years on active duty if called by the Secretary of the Air Force.

MILITARY SERVICE DELAY

Deferment from induction under the Selective Service Act of 1951 may be granted to selected students within authorized quotas. Normally, a student is not considered for draft deferment until he has completed one term's work in the University, with a quality-point index of at least 2.00. A student's deferment is subject to withdrawal if his quality-point index falls below 2.00. Students who are deferred and whose deferments are subsequently cancelled because they failed to fulfill the conditions under

which deferments were originally granted can not again be deferred without the approval of the Chief of Staff, USAF.

To receive a deferment a student must agree to complete the basic course, if enrolled therein; to complete the advanced course at the proper time if selected for enrollment therein; to accept a Reserve Commission if tendered; to serve on active duty for a period of not less than two years if called; and to remain a member of a reserve component of the Air Force for eight years from the date of his commission.

It is the student's responsibility to notify his local draft board of this agreement and the termination thereof, as well as to notify the Director of Air Science whenever he intends to transfer to another institution.

STUDENT HONORARY MILITARY SOCIETIES

The Arnold Air Society.—A national honorary military society of Advanced Air Force ROTC cadets established to further the mission, traditions, and concept of the United States Air Force as a means of national defense, to promote American citizenship, and to create a close and more rewarding relationship among the Air Force ROTC cadets. The national organization founded in 1947, was named in honor of the late General of the Air Force Henry Harley Arnold. The local squadron established in 1952, was named in honor of General Carl Spaatz (retired), the first Chief of Staff of the United States Air Force. Only advanced Air Force ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and gold auguilette and ribbon on their cadet uniforms.

Pershing Rifles.—A national honorary military society founded in 1894 by Lieutenant (later General of the Armies) John Joseph Pershing. Its purpose is to encourage, preserve, and develop the highest ideals of the military profession, promote American citizenship, create a closer and more efficient relationship, and provide appropriate recognition of a high degree of cadet achievement. Only basic ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and silver cord and ribbon on their cadet uniforms.

Flying Sponsors.—A local women's honorary organization established in 1952 to sponsor Air Force ROTC activities and encourage applications for flying training.

REGULATIONS

Students in the Division of Air Science are subject to and are expected to familiarize themselves with the University regulations stated on pages 12-26 and 42-49; the regulations of the college, school, or division in which enrolled; and the regulations of the United States Air Force pertaining to Air Force ROTC cadets. A copy of Cadet Regulations is turned to each student upon enrollment.

THE SUMMER SESSIONS

Burnice Herman Jarman, A.M., Ed.D., *Director of the Summer Sessions*

DIRECTOR'S COUNCIL •

Wood Gray

Ira Bowers Hansen

During the summer of 1954 the University offers an eight-week session for undergraduate and graduate students in the Arts and Sciences. The Law School offers work in two six-week sessions. The School of Education offers a special six-week session for teachers, with a pre-session of three weeks and a post-session of three weeks.

During the summer of 1954, courses are offered in the Junior College, Columbian College (the senior college), the Law School, the School of Pharmacy, the School of Education, the School of Government, and the College of General Studies.

For a complete statement concerning summer-term work, see the Summer Sessions catalogue.

* The President of the University, the Dean of Faculties of the University, and the Director of the Summer Sessions are members ex officio of the Council.

ADMINISTRATIVE UNITS

HEALTH ADMINISTRATION

Daniel LeRay Borden, A.M., M.D., *University Surgeon, Director*
Charles Joseph Savarese, Jr., A.B., M.D., *University Physician*
Sally Steele MacDonald, A.B., M.D., *Associate University Physician*
Robert Howe Harmon, A.B., M.D., *Associate University Physician*
Ronald Atmore Cox, A.B., M.D., *Associate University Physician (Eye)*
Richard Bernard Castell, A.B., M.D., *Associate University Physician*
Alfred Brigulio, M.D., *Associate University Physician*
Hugh Osgood House, M.D., *Associate University Physician (Nose and Throat)*
Benjamin Franklin Dean, Jr., M.S., M.D., *Associate University Surgeon*
Juanita Pullen Love, R.N., *Nurse-Secretary*

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M. with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school;* (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team

* A charge of \$2 for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

is required to pass a thorough examination at the beginning of each term; (5) the above regulations apply also during the summer term of the University.

The University is not responsible for injuries received in inter-collegiate or intra-mural games, or in any of the activities of the physical education departments.

VETERANS EDUCATION

The Office of Veterans Education of The George Washington University operates as a service bureau for veterans interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained concerning the educational program of the University and the procedure for securing the educational benefits for veterans of World War II (Public Law 346) or "Korean" veterans (Public Law 550).

PUBLIC LAW 346

At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, NW., Washington 25, D. C. for a Certificate of Eligibility and Entitlement, for presentation to the Office of Veterans Education at the time of registration. Veterans who have attended another institution under the GI Bill must obtain a Supplemental Certificate of Eligibility to present to this University.

Attention is invited to the provision of law which prescribes that courses under this GI Bill must be "initiated not later than four years after either the date of discharge or the termination of the present war, whichever is the later". For most veterans this means that the course must have been initiated by July 24, 1951. This deadline date has several important implications for veterans to whom it applies: (1) changes of course or of institution are much more difficult to get approved by the Veterans Administration than formerly; (2) veterans, with few exceptions, will be required to maintain continuity in course by taking at least one subject each fall term and each spring term; and (3) in most cases veterans who withdraw from the University during the fall term, the spring term, or a summer term will be considered to have terminated their courses and thus forfeited further educational benefits. Any veteran who has interrupted his training during a term must secure authorization to reenter from Veterans Administration to be presented at the time of registration.

Veterans already enrolled in the University are requested to consult the Office of Veterans Education prior to making any changes in academic program, because of changes in Veterans Administration regulations concerning Supplemental Certification.

PUBLIC LAW 550

In order to be eligible for the benefits under this GI Bill, a veteran must have been in service since June 27, 1950, and must no longer be on active duty. For further information concerning these benefits, it is suggested that he contact the Office of Veterans Education or Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, NW., Washington 25, D.C.

At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, NW., Washington 25, D. C., for a Certificate for Education and Training, for presentation to the Office of Veterans Education at the time of registration. A photostatic copy of separation papers must accompany the original application for certification.

VOCATIONAL REHABILITATION

Disabled veterans desiring vocational rehabilitation under either GI Bill should apply to Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, NW., Washington 25, D. C., for approval of their training objectives at least sixty days prior to registration.

ADMISSION

The entrance requirements for the Junior College, Columbian College, and the School of Government, in other than the pre-professional curricula, have been somewhat modified for veterans who are deficient in the regular requirements for admissions, but who have been found by psychological and educational tests able to undertake college work. Veterans who have been enrolled in another educational institution since leaving the service, or who have been out of the service for more than one year prior to the beginning of the term for which they seek admission, must qualify under the regular admissions policies. (For admission requirements and procedure, see pages 12-21.)

Credit for work done in the service schools is granted by the Junior College, Columbian College, the School of Engineering, and the School of Government provided the veteran has not been out of the service for three years or more. To be considered for such credit veterans should submit to the Director of Admissions photostatic copies of their records indicating courses successfully completed with sufficient identification of the course to enable the Admissions Office to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1954 and in the academic year 1954-55. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Courses of instruction are scheduled in the morning, afternoon, and evening. Evening classes are identical with daytime sections of corresponding courses, are taught by the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular curriculum and obtain a degree.

EXPLANATION OF COURSE NUMBERS

An odd number preceding the name of the course indicates that the course is offered in the fall term; an even number, that it is offered in the spring term; and a double number (157-58), that it begins in the fall term and continues in the spring term. The letter "x" following an odd course number (e.g., 21x) indicates that the course, normally offered in the fall term, is given in the spring term. The letter "x" following an even course number (e.g., 22x) indicates that the course, normally offered in the spring term, is given in the fall term.

In the departments of the School of Medicine, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500. This includes courses open to both medical and nonmedical students. Courses limited to nonmedical students follow the numbering system used in "all other schools and colleges" (see below).

In the Law School, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

In all other schools and colleges the following system of numbering is used:

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors.

In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors; they are not open to Junior College students or other undergraduates.

INDICATION OF THE AMOUNT OF CREDIT

The number of credit hours given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each term is marked (3-3), and a term course giving three hours of credit is marked (3). A credit hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one term.

A dagger (†) preceding the number of a year course indicates that the course may not be entered in the second term and that credit will not be given until the work of both terms has been completed.

ACCOUNTING

Ralph Dale Kennedy, Ph.D., *Professor of Accounting, Executive Officer*
 Orton Wells Boyd, A.M., C.P.A., *Professorial Lecturer in Accounting*
 Edwin Lewis, M.B.A., *Professorial Lecturer in Accounting*
 Clarence McLaughlin, B.S., LL.B., *Professorial Lecturer in Accounting*
 Forest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*
 Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*
 James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*
 Harold Jerome Bobys, A.B., C.P.A., *Professorial Lecturer in Accounting*
 Fernand Vincent Demaret, M.S., *Professorial Lecturer in Accounting*
 Henry Alexander Berry, M.B.A., C.P.A., *Professorial Lecturer in Accounting*
 Wilbur Earle Benson, M.B.A., *Instructor in Accounting*

Associate in Arts (Junior College—Two-year vocational curriculum in Accounting).—For curriculum, see page 66.
Bachelor of Arts and Master of Arts in Government with a major in Accounting (School of Government).—See pages 173 and 177.

FIRST GROUP

1-2 *Introductory Accounting* (3-3)

The Staff

Study of basic principles underlying accounting records used by single proprietorships, partnerships, and corporations; preparation of the work sheet and financial statements; introduction to cost accounting and to valuation and income determination problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. Morning and evening sections. (Also offered 1954 summer term.)

Accounting 1x, same as 1, offered spring term. Morning and evening sections.

Accounting 2x, same as 2, offered fall term. Morning and evening sections.

3 *General Accounting* (3)

Kennedy

Study of accounting theory and practice with emphasis on accounting terminology and the analysis and interpretation of accounting data. A course designed for those who need only a survey of accounting. (Not offered in 1954-55.)

SECOND GROUP

101 *Cost Accounting* (3)

Berry, Benson

Study of the theory and purposes of industrial cost accounting; treatment of the systems of cost control and determination; and the analysis and interpretation of cost data. Prerequisite: Accounting 1-2. Evening. (Also offered 1954 summer term.)

Accounting 101x, same as 101, offered spring term. Morning.

111 Financial Statement Analysis (3)

Kennedy, Steele

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; determination and interpretation of trends and ratios. Prerequisite: Accounting 1-2. Morning. (Also offered 1954 summer term.)

Accounting 111x, same as 111, offered spring term. Evening.

121-22 Intermediate Accounting (3-3)

Benson, Steele

Study of valuation and income determination problems; treatment of depreciation, funds, and reserves; accounting for the organization, financing, operation, and dissolution of partnerships and corporations. Prerequisite: Accounting 1-2. Prerequisite to 122: Accounting 121. Morning and evening sections.

132 Accounting Theory (3)

Kennedy

Study of the development of basic accounting principles and concepts with special reference to the current thought expressed by the American Institute of Accountants and the American Accounting Association. Prerequisite: six hours of accounting. Morning.

141 Governmental Accounting (3)

Lewis

Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis placed on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1-2 or permission of the instructor. Evening.

142 Federal Accounting (3)

Lewis

Accounting problems and reports of the Federal Government. Prerequisite: Accounting 141 or permission of the instructor. (Not offered in 1954-55.)

151 Governmental Budgeting—Formulation and Adoption (3)

Buckler

Study of the development of budgetary theory and current techniques, procedures, and problems relating to the formulation and adoption of municipal, state, and federal government budgets. Evening.

152 Governmental Budgeting—Administration (3)

Buckler

Theory, practices, procedures, and problems involved in the evaluation and administration of budgeted programs for municipal, state, and federal governments. Prerequisite: Accounting 151 or permission of the instructor. Evening.

155 Business Budgeting (3)

Buckler, Brimacombe

Study of the principles, preparation, and administration of a business budget with emphasis on the importance of the budget to management. Prerequisite: Accounting 1-2. Morning. (Also offered 1954 summer term.)

Accounting 155x, same as 155, offered spring term. Evening.

161 Business Taxation (3)

Boyd, Bobys

A managerial approach to the impact of federal taxation upon the organization, reorganization, financing, and operation of business enter-

prises; difference between tax accounting and financial accounting; pension funds. Prerequisite: Accounting 1-2. Morning and evening sections.

- 162 **Federal Tax Practice (3)** McLaughlin
The professional accountant's practice of federal taxation, including the income tax and estate and gift taxes; preparation of returns; assessment, collection and refund procedures; use of the tax services. Prerequisite: Accounting 161 or permission of the instructor. Evening.

- 171 **Auditing (3)** Berry
Study of the duties and responsibilities of the auditor; principles and procedures of making audits; the techniques of verifying each financial statement item, and the preparation of audit working papers and reports. Prerequisite: Accounting 121-22. Evening.

- 181 **Accounting Systems (3)** Lewis
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 122, and 171, or permission of the instructor. Evening.

- 191 **Advanced Accounting (3)** Demaret
Intensive study of consolidated statement, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121-22. Evening.

- 198 **Professional Accounting Review (3)** Lewis
Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation both for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor. Evening.

THIRD GROUP

- 202 **Advanced Cost Accounting (3)** Berry
Study of advanced cost accounting theory and problems with emphasis on development and analysis of standard costs, the use of cost data for managerial control, and distribution cost accounting. Prerequisite: Accounting 101 or permission of the instructor. Evening.

- 211 **Managerial Accounting (3)** Brimacombe
Study of the accounting system with special reference to the use of financial and operating records as a tool of management; emphasis is placed on managerial internal accounting control, accounting reports, and the use of budgets and cost data in directing and controlling the business. Prerequisite: nine hours of accounting or the permission of the instructor. Evening.

- 231 **Contemporary Accounting Theory (3)** Kennedy
An intensive study of advanced accounting principles and concepts and of recent theories in connection with the valuation of assets and the determination of income. Prerequisite: eighteen hours of Accounting or permission of the instructor.
Summer term 1954.

- 246 *Governmental Accounting and Budgeting Problems (3)* Lewis
Advanced principles and practices in federal accounting relationship to general policy and administration. Prerequisite: Accounting 142 and 152, or permission of the instructor. (Not offered in 1954-55.)
- 272 *Auditing Practice (3)* Berry
Preparation of an audit report, accounting statements to be filed with Securities and Exchange Commission, current developments of auditing standards and practice. Prerequisite: Accounting 171 or permission of the instructor. Evening.
- 275 *Internal Control and Auditing (3)* Kennedy
Study of internal accounting controls; review and appraisal of accounting systems and procedures; study and evaluation of managerial policies with respect to their effectiveness and profitableness. Emphasis is placed upon the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor. (Not offered in 1954-55.)
- 295-96 *Seminar in Accounting (3-3)* Kennedy
Study, investigation, and discussion of selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor. Evening.
- 299-300 *Thesis (3-3)* The Staff
Time to be arranged. (Also offered 1954 summer term.)

AIR SCIENCE

Carl Swyter, B.S. in E.E., Colonel, United States Air Force, *Professor of Air Science, Executive Officer*

Willard De Lano, A.M., Major, United States Air Force, *Assistant Professor of Air Science*

Robert Kenyon Schubert, Major, United States Air Force, *Assistant Professor of Air Science*

Gregory Denis Picone, B.S., Major, United States Air Force, *Assistant Professor of Air Science*

Calvin Lee Frederick, First Lieutenant, United States Air Force, *Assistant Professor of Air Science*

Clarence William Voth, Master Sergeant, United States Air Force, *Instructor in Air Science*

Edgar Frank Auten, Master Sergeant, United States Air Force, *Instructor in Air Science*

James Miklovich, Master Sergeant, United States Air Force, *Instructor in Air Science*

Raymond Lloyd Hauck, Technical Sergeant, United States Air Force, *Instructor in Air Science*

Training Certificate.—This certificate is awarded upon satisfactory completion of the basic Air Force ROTC course of instruction. Upon presentation of this certificate, eligible applicants may be accepted for enlistment in the Air Force Reserve in the grade of Airman 2d Class.

Commission in the United States Air Force Reserve.—Upon being awarded a Bachelor's degree and upon the satisfactory completion of the Air Force ROTC course of instruction prescribed by law and regulations, the graduate may be appointed Second Lieutenant, United States Air Force Reserve, if he is physically, mentally, morally, and professionally qualified.

FIRST GROUP

1-2 Air Science I—Freshman Year (2-2) The Staff
Introduction to Air Force ROTC and aviation; fundamentals of global geography; international tensions and security organizations; instruments of national military security; drill and basic military training. Three hours a week. Morning and afternoon sections.

51-52 Air Science II—Sophomore Year (2-2) The Staff
Elements of aerial warfare covering targets, weapons, aircraft, air ocean, bases, and forces; careers in the United States Air Force; and leadership laboratory covering cadet non-commissioned officer training. Prerequisite: Air Science 1-2 or equivalent active military training. Three hours a week. Morning and afternoon sections.

SECOND GROUP

101-2 *Air Science III—Junior Year (3-3)*

The Staff

The Air Force Commander and his Staff; problem solving techniques; the communications process and Air Force correspondence; military law, courts and boards; applied air science; Air Force base functions; and leadership laboratory covering cadet flight and squadron and group officer training. Prerequisite: Air Science 51-52 or equivalent active military training and selection by a board of University and Air Force officials. Five hours a week. Morning.

103 *Summer Camp—Between Junior and Senior Years (required)*

The Staff

Attendance at a four- to six-week Air Force ROTC summer camp at an active Air Force base within the continental United States is mandatory between the junior and senior years. The program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training. Prerequisite: Air Science 101-2.

Summer term 1954.

151-52 *Air Science IV—Senior Year (3-3)*

The Staff

Leadership seminar; career guidance; military aspects of world political geography; military aviation and the art of war; briefing for commission service; and leadership laboratory covering instruction of subordinates, planning and supervising drill, and other cadet corps activities. Prerequisite: Air Science 101-2 and Summer Camp (Air Science 103). Five hours a week. Morning.

ANATOMY

Ira Rockwood Telford, Ph.D., *Professor of Anatomy, Executive Officer*
 *Paul Calabrisi, A.M., *Associate Professor of Anatomy*
 Ivor Cornman, Ph.D., *Assistant Research Professor of Anatomy*
 Gerald Fred Hungerford, Ph.D., *Assistant Professor of Anatomy*
 Frank Duane Allan, Ph.D., *Assistant Professor of Anatomy*
 Thomas Nick Johnson, Ph.D., *Assistant Professor of Anatomy*
 Wilfred Walter Eastman, B.S., M.D., *Clinical Instructor in Anatomy*
 Lloyd Eugene Church, A.B., D.D.S., M.S., *Clinical Instructor in Anatomy*
 Eugene William Eberlin, A.B., B.S., M.D., *Clinical Instructor in Anatomy*
 Raymond Nathan Brown, M.D., *Clinical Instructor in Anatomy*

Master of Science in the field of Anatomy (Columbia College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree from this University, or the equivalent, with a major in Biology, Chemistry, or Zoology. The undergraduate program must include the following courses, or the equivalent: Chemistry 11-12, 21, 151-52; Physics 6, 7; Zoology 1-2, 41-42. Biochemistry 221-22 is recommended as an elective.

Required: thirty credit hours of graduate work including Anatomy 203, 204, 205, 221-22, 295-96, 299-300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. Note the general requirements on pages 83-85. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 90.

101-2 *Gross Anatomy*

Hungerford and Staff

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. Eighteen hours a week, fall term; nine hours a week, spring term.

103 *Human Embryology*

Telford and Staff

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology. Three hours a week.

104 *Neuroanatomy*

Johnson and Staff

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. Six hours a week.

* On leave of absence 1954-55.

- 105 *Microscopic Anatomy* Telford and Staff
Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations. Six hours a week.
- 201-2 *Gross Anatomy (8-6)* Hungerford and Staff
For qualified non-medical graduate students. Same as Anatomy 101-2. Laboratory fee, \$35. Time to be arranged.
- 203 *Human Embryology (2)* Telford and Staff
For qualified non-medical graduate students. Same as Anatomy 103. Laboratory fee, \$5. Time to be arranged.
- 204 *Neuroanatomy (4)* Johnson and Staff
For qualified non-medical graduate students. Same as Anatomy 104. Laboratory fee, \$10. Time to be arranged.
- 205 *Microscopic Anatomy (4)* Telford and Staff
For qualified non-medical graduate students. Same as Anatomy 105. Laboratory fee, \$10. Time to be arranged.
- 221-22 *Seminar (1-1)* The Staff
Reports and discussions of special topics by the Staff and graduate students. For graduate liberal arts students. Regular medical students are encouraged to attend. One hour a week. Time to be arranged.
- 295-96 *Research (arr.)* The Staff
Time, credits, and fees to be arranged.
- 299-300 *Thesis (3-3)* The Staff

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*

Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*

Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*

Salomon Naphtali Albert, A.B., M.D., D.A., *Instructor in Anesthesiology*

William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*

Allen Widome, M.D., *Clinical Instructor in Anesthesiology*

320 *Anesthesiology*

The Staff

Review of basic sciences, correlation between basic sciences and clinical work. One hour a week.

421-22 *Anesthesia Seminar*

The Staff

Students attend anesthesia seminars during their surgical clinical clerkships. One hour a week. University Hospital.

433-34 *Advanced Anesthesiology*

The Staff

Students are rotated through the work of the department for a period of one week and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

ART

Norris Ingersoll Crandall, M.Arch., *Professor of Art*
 Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art, Executive Officer*
 Grose Evans, B.F.A., Ph.D., *Lecturer in Art*

STAFF IN THE CORCORAN SCHOOL OF ART

DRAWING AND PAINTING: Richard Lahey, Principal; Edmund Archer, Jessalee Sickman, Omar Carrington, John Lewis, Leonard Maurer
SCULPTURE AND CARVING: Heinz Warneke
COMMERCIAL ART: Edward Forrest Walton
INTERIOR DESIGN: Paul Siple Kettering

Bachelor of Arts (Columbian College—Departmental):

The major in Art Appreciation.—Prerequisite: the Arts and Letters curriculum in the Junior College, or the equivalent, including Art 11-12, see page 62.

Required: in addition to the general requirements stated on pages 77-82, thirty credit hours in Art, which must include Art 121-22, 151-52, and 161-62.

The major in Drawing and Painting.—Prerequisite: the Arts and Letters curriculum in the Junior College, or the equivalent, including six credit hours selected from Art 11-12, and 71-72.

Required: in addition to the general requirements stated on pages 77-82, Art 121-22; six hours selected from Art 143, 146, and 151-52; and twenty-four credit hours in drawing and painting. Classes in drawing and painting, sculpture, and commercial art are held at the Corcoran School of Art.

Bachelor of Arts in Education with a teaching field in Art (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the Art option, pages 152-53, and professional courses listed on pages 158-59.

FIRST GROUP

11-12 *Art Appreciation (3-3)*

Meaning of art in historic periods; criticism of works from pre-historic times to the present; symbology of lines, light values, color, composition form. Morning and evening sections.

Crandall

65-66 *Drawing and Painting—Life, Still Life, and Portrait (3-3)*

For beginners. Afternoon.

The Staff

67-68 *Drawing and Painting—Life and Portrait (6-6)*

For beginners. Morning, afternoon, and evening sections.

Archer

71-72 *Introduction to the Arts in America (3-3)*

Painting, sculpture, architecture, furniture, and the popular arts from the colonial beginnings to the present. Morning and evening sections. (Also offered 1954 summer term.)

Kline

- 75-76 *Drawing and Painting—Life, Still Life, and Portrait* (3-3) The Staff
Afternoon.
- 77-78 *Drawing and Painting—Life, Still Life, and Portrait* (6-6) Sickman, Carrington
Morning, afternoon, and evening sections.

SECOND GROUP

- 101-2 *The Design of the Home* (3-3) Crandall
The home: history, personality, location, cost, financing, maintenance, structure, light, and color. (Not offered 1954-55.)
- 121-22 *World History of Art* (3-3) Kline
The fine arts from ancient times to the nineteenth century. 1954-55 and alternate years, afternoon; 1955-56 and alternate years, evening.
- 141-42 *Interior Decoration* (3-3) Kline
Principles of decoration dealing with furniture, materials of the background, draperies, lighting, and a study of the contemporary house for family living. Evening.
- 143 *Folk Arts of America* (3) Kline
Woodcarving, painting, ceramics, glass, furniture, and music. (Not offered in 1954-55.)
- 146 *Art of the Far East* (3) Kline
The architecture, painting, and sculpture of China and Japan. (Not offered in 1954-55.)
- 151-52 *Modern Art* (3-3) Evans
From neoclassicism to abstraction and surrealism in painting, and a related study of modern sculpture and architecture. Morning.
- 161-62 *History of Art Criticism* (3-3) Crandall
A survey of art criticism from ancient Greece to the present. Afternoon.
- 165-66 *Drawing and Painting—Life and Portrait* (6-6) Lahey, Lewis
Morning, afternoon, and evening sections.
- 175-76 *Drawing and Painting—Life and Portrait* (6-6) Lewis
Afternoon.
- 177 *Still Life and Landscape* (3) Maurer
Drawing and painting in all mediums.
Summer term 1954.
- 178 *Figure, Still Life, and Composition* (3) Maurer
Drawing and painting in all mediums. Classes conducted indoors.
Summer term 1954.
- 179-80 *Sculpture* (6-6) Warneke
Portrait-life modeling and composition in clay, plaster and wood carving. Afternoon and evening sections.

181-82 *Design and Commercial Art* (3-3)

Prerequisite: Art 75-76. Afternoon.

The Staff

183-84 *Commercial Art* (6-6)

Illustration, creative lay out, lettering, fashion design, and merchandise drawing. Prerequisite: Art 78 or the equivalent. Afternoon and evening sections.

Walton

185-86 *Advanced Commercial Art* (arr.)

Time and credit to be arranged.

Walton

187-88 *Interior Design* (4-4)

Practical problems, creative practice, and presentations in room arrangement, color, furniture design, fabrics, and accessories, both traditional and contemporary. Morning.

Kettering

BACTERIOLOGY, HYGIENE, AND PREVENTIVE MEDICINE

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology, Executive Officer*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Ralph Gregory Beachley, M.D., Dr.P.H., *Adjunct Professor of Public Health Practice*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
William Gray McCarten, M.S., *Assistant Professor of Bacteriology*
Charles Francis McCaffrey, M.D., *Clinical Instructor in Preventive Medicine and Public Health*

SPECIAL LECTURERS

Chester Wilson Emmons, Ph.D., *Chief, Medical Mycology Unit, Laboratory of Infectious Diseases, National Microbiological Institute, National Institutes of Health; Medical Mycology*
Willard Hull Wright, D.V.M., Ph.D., *Chief, Laboratory of Tropical Diseases, National Microbiological Institute, National Institutes of Health; Medical Zoology*
John Roderick Heller, Jr., B.S., M.D., *Director, National Cancer Institute, National Institutes of Health; Cancer Control*
Carl John Lauter, M.S., *Senior Chemical Engineer, Corps of Engineers, United States Army; Environmental Sanitation*
Robert Carter Cook, *Director, Population Reference Bureau; Editor, Journal of Heredity; Medical Genetics*
Robert Hanna Felix, M.D., M.P.H., *Director, National Institute of Mental Health, National Institutes of Health; Mental Hygiene*
Francis Byron Gordon, Ph.D., M.D., *Chief, Virus and Rickettsia Division, Chemical Corps Biological Laboratories, Camp Detrick; Virology*
Edward Kramer Funkhouser, B.S., *Executive Secretary, District of Columbia Tuberculosis Association; Community Health Resources*
Samuel Jacob Ajl, Ph.D., *Chief, Microbiological Chemistry, Department of Bacteriology, Army Medical Service Graduate School; Microbiological Chemistry*
Sarah Bishop Brooks, R.N., B.S. in P.H.N., *Director, Division of Public Health Nursing, Arlington County Health Department; Public Health Practice*
Martin Marc Cummings, B.S., M.D., *Chief, Research and Education Service, Department of Medicine and Surgery, Veterans Administration; Medical Bacteriology*

Master of Arts or Master of Science in the field of Bacteriology (Columbia College).—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively, from this University, or the equivalent, with a major in Biology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or the equivalent: Chemistry 11-12, 21, 151-52; Physics 6, 7; Zoology 1-2, 41-42.

Required: thirty credit hours, including Bacteriology 209, 210, 293-94, 295-96, 299-300. The remaining courses are to be selected from Bacteriology 219-20, 229, 230, 232, 240 and Biochemistry 221-22 (if not presented for admission). The student with much bacteriological background may substitute for credit one course from the following: cytology, genetics, cell physiology, entomology, histology, biostatistics, and protozoa. It is not always possible to arrange courses and research so that the student can be assured of completing all required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 90.

112 General Bacteriology (4)

For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11-12. Laboratory fee, \$9. Tues., Thurs., and Sat., 9:10 to 12:00 A.M.

209 Medical Microbiology (1-11)

Bacteria, rickettsia, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and diseases of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. Open to suitably prepared graduate students; may be elected as a whole or in part by adding the appropriate letter to the course number, with credit allocated as follows: (a) Bacteriology, including rickettsia and viruses—lecture—laboratory (3); (b) Parasitology, including medical mycology—lecture (2), laboratory (1); (c) Immunology (1). May be taken by a limited number of candidates for Master's degrees. Laboratory fee, \$3 for each credit hour of laboratory work. Time to be arranged.

210 Fundamentals of Epidemiology and Public Health (2)

Sources, modes, and implications of infection and injury. Consideration also given the problems of accidents and industrial medicine. Open to liberal arts graduate students. Prerequisite: Bacteriology 112 or 209. Mon., 2:00 to 4:00 P.M.

219-20 Advanced Microbiology (arr.)

Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Bacteriology 112 or 209; Chemistry 151-52 or the equivalent; permission of the instructor. Laboratory fee, \$3 a credit hour. Time and credits to be arranged.

229 Virology (6)

Study of viruses and rickettsiae. Lectures and laboratory exercises for liberal arts graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, \$10. 1954-55 and alternate years. Time to be arranged.

Robbins

Parr and Staff

Parr, Griffin

Robbins

- 230 *Statistics in Microbiology* (3) Griffin
The application of statistical methods to the problems of microbiology. For liberal arts graduate students. Prerequisite: entrance or elementary college algebra. 1955-56 and alternate years.
- 232 *Immunological Methods* (3) Griffin
Preparation and testing of serological materials. Demonstration of basic serological phenomena. For liberal arts graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, \$6. 1954-55 and alternate years. Time to be arranged.
- 240 *Advanced Epidemiology and Public Health* (3) Parr
Conferences, readings, and problems for graduate students dealing with specialized and advanced phases of the topics presented in Bacteriology 210. Prerequisite: Bacteriology 210. 1955-56 and alternate years.
- 293-94 *Staff Seminar* (1-1) The Staff
For liberal arts graduate students. Bi-weekly throughout the year. Time to be arranged.
- 295-96 *Research in Bacteriology* (arr.) The Staff
Time and credits to be arranged.
- 299-300 *Thesis* (3-3) The Staff
- 340 *Health Resources Survey* Beachley, Cadwell
A survey of complete medical care from first contact, through laboratory and clinical diagnosis, adequate medical or surgical treatment to full family and community rehabilitation. Case histories assigned junior students with the cooperation and assistance of the clinical departments. Comparison is to be made between care in near-ideal facilities and care in facilities where the student might begin his practice. Emphasis is on coordination of the private practice of medicine and community public health and welfare activities, both tax supported and voluntary. Throughout the holistic point of view is assumed. One hour a week for three weeks and independent research during summer.
- 401 *Public Health Practice* Beachley and Staff
Study of public health practice at national, state, city, and county levels. Public and private agencies. One hour a week for eight weeks.

BIOCHEMISTRY

Joseph Hiram Roe, Ph.D., *Professor of Biochemistry, Executive Officer*
 Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
 William Henry Sebrell, Jr., M.D., *Professorial Lecturer on Nutrition*
 George Washington Irving, Jr., Ph.D., *Professorial Lecturer on Proteins*
 Bernard Leonard Horecker, Ph.D., *Professorial Lecturer on Enzymes*
 Benjamin Williams Smith, Ph.D., *Assistant Professor of Biochemistry*
 Robert Allen Clayton, Ph.D., *Assistant Professor of Biochemistry*
 Klaus Schwarz, M.D., *Associate in Biochemistry*
 Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*
 Norman Philip Goldstein, A.M., M.D., *Associate in Biochemistry*
 Hildegard Newcomb Wilson, Ph.D., *Associate (Research) in Biochemistry*

Master of Arts or Master of Science in the field of Biochemistry (Columbia College).—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must have included the following courses, or the equivalent: Chemistry 11-12, 21, 22, 151-52; Physics 6 and 7; Zoology 1-2 or Biology 1-2.

Required: thirty credit hours including Biochemistry 221-22, 225, 226, 227-28, 299-300. The remaining courses are to be selected from Biochemistry 231, 251, 261, 295-96, 404, or, with the approval of the adviser, from graduate courses in Bacteriology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 90.

113-14 *Biochemistry*

Physiological and clinical chemistry. Two lectures, one conference hour, and two three-hour laboratory periods a week. Roe and Staff

221-22 *Biochemistry (4-4)*

A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 22 and 152. Material fee, \$12 a term. Treadwell
 Thurs., 9:00 to 12:00 A.M. and 1:00 to 2:00 P.M. Tues. and

224 *Biochemistry of the Enzymes (1)*

Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. Horecker
 5:00 P.M. Mon.

225 *Biochemical Preparations (3)*

For liberal arts graduate students. Material fee, \$12. The Staff
 arranged. Time to be

226 *Biochemical Laboratory Methods (3)*

For liberal arts graduate students. Material fee, \$12. The Staff
 arranged. Time to be

- 227-28 *Biochemistry Seminar (1-1)* Roe
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. Fri., 4:00 P.M.
- 231 *Proteins and Amino Acids (1)* Irving
A lecture course for liberal arts graduate students. Prerequisite: Biochemistry 114 or 222. 1954-55 and alternate years, Mon., 5:00 P.M.
- 251 *Carbohydrate Metabolism (1)* Roe
A lecture course. Prerequisite: Biochemistry 114 or 222. 1954-55 and alternate years, Sat., 9:00 A.M.
- 261 *Biochemistry of the Lipids (1)* Treadwell
A lecture course. Prerequisite: Biochemistry 114 or 222. 1955-56 and alternate years.
- 295-96 *Research in Biochemistry (arr.)* Roe, Treadwell
Time and credits to be arranged.
- 299-300 *Thesis (3-3)* Roe, Treadwell
- 404 *Applied Nutrition (1)* Sebrell
For senior medical students and graduate students. Lecture course upon dietary requirements, deficiency diseases, and therapeutic diets. Prerequisite: Biochemistry 113 or 221. Sat., 9:00 A.M.

BIOLOGY*

Paul William Bowman, Ph.D., *Professor of Biology, Executive Officer*
 Sam Clark Munson, Ph.D., *Associate Professor of Biology*
 Robert Carter Cook, *Lecturer on Genetics*

Bachelor of Arts or Bachelor of Science with a major in Biology (Columbian College—Field of Study).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 62-63.

Required: the general requirements as stated on pages 77-82 and the grade of "pass" on the Biology major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the classification and life histories of plants and animals, ecology, geology, evolution, heredity, the physical and cultural development of man, public health problems, and the history of biology. The course offerings will be correlated and supplemented by supervised study in a proseminar. For further details, see the pamphlet, which is available at the Office of the Dean of Columbian College.

Master of Arts or Master of Science in the field of Biology (Columbian College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Biology at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86.

Bachelor of Arts in Education with a teaching field in Biology (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the Biology option, page 153, and the professional courses listed on pages 158-59.

Doctor of Philosophy (Graduate Council).—See page 91.

FIRST GROUP

1-2 Survey in Biology (3-3)

Systematic study of the plant and animal kingdoms, with emphasis upon the interdependence of living things and their relations with their environments. Introduction to evolution, heredity, public health and conservation. Material fee, \$5 a term. Lecture (1 hour)—afternoon and evening sections; laboratory (2 hours)—morning, afternoon, and evening sections; field trip to nearby countryside and to museums and other places of biological interest (3 hours)—morning and afternoon sections. (Also offered 1954 summer term.)

Munson

SECOND GROUP

115-16 Cytology (3-3)

Study of plant and animal cells and their components, including the chromosomes and their role in heredity, with training in the preparation of materials for study. Prerequisite: one year of college work in biology, botany, or zoology. Material fee, \$6 a term. Lecture (1 hour); recitation (1 hour); laboratory (3 hours)—evening.

Bowman

* See also departments of Botany and Zoology.

127 *Genetics* (3)

Cook

A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. Prerequisite: one year of college work in biology, botany, or zoology. Evening.

139 *Cell Physiology* (3)

Yocum

The fundamental physiology of protoplasm. Prerequisite: Chemistry 12 and one year of college biology, botany, or zoology. Morning.

146 *Environmental Measurements* (3)

Studies in the problems encountered in measuring various environmental factors in terrestrial and aquatic habitats. Emphasis will be placed upon techniques, but the practical applications of environmental measurements will be discussed as the work progresses. Prerequisite: Biology 1, Botany 1, or Zoology 1. (Not offered in 1954-55.)

197-200 *Proseminar in Biology* (3-3)

Bowman

Individually planned and directed study by means of which majors in biology may correlate and supplement the subject matter presented in various regular courses. Morning.

THIRD GROUP

201-2 *Seminar: Cytology* (3-3)

Bowman

Evening.

211-12 *Research in Cytology* (arr.)

Bowman

Time and credits to be arranged. (Also offered 1954 summer term—Biology 211.)

299-300 *Thesis* (3-3)

Bowman

Time to be arranged. (Also offered 1954 summer term—Biology 299 (3).)

BOTANY*

Lawson Edwin Yocum, Ph.D., *Professor of Botany, Executive Officer*
 William Webster Diehl, Ph.D., *Adjunct Professor of Mycology*
 Lyman Bradford Smith, Ph.D., *Professorial Lecturer on Taxonomy*
 John Gilbert Palmer, M.S., *Assistant Professor of Botany*

Bachelor of Arts or Bachelor of Science with a major in Botany (Columbia College—Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 62-63.

Required: in addition to the general requirements as stated on pages 77-82, a minimum of twenty-four credit hours in Botany beyond the introductory courses, with collaterals as recommended in conference.

Master of Arts or Master of Science in the field of Botany (Columbia College).—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany.

Required: the general requirements as stated on pages 83-86.
Doctor of Philosophy (Graduate Council).—See page 91.

FIRST GROUP

1 *Structure and Functions of the Flowering Plant*† (3)

Yocum, Palmer

The typical plant as a working mechanism, with the emphasis on the general biological significance of plant physiology. Material fee, \$5. Lecture (2 hours); laboratory (2 hours)—morning, afternoon, and evening sections. (Also offered 1954 summer term.)
 Botany 1x, same as 1, offered spring term. Lecture—morning; laboratory—afternoon.

2 *Survey of the Plant Kingdom* (3)

Yocum, Palmer

Study of the different kinds of plants, with emphasis on the evolution of the plant kingdom; practice in identifying flowering plants. Material fee, \$5. Lecture (2 hours); laboratory (2 hours)—morning, afternoon, and evening sections. (Also offered 1954 summer term.)

SECOND GROUP

105 *Field Botany* (3)

Palmer

Field trips to neighboring localities of botanical interest, with classroom study. Prerequisite: Botany 1 and 2 or Biology 1-2. Lecture (2 hours); laboratory (4 hours); field trips (3 hours). 1955 and alternate summer terms.

107 *Algae, Fungi, and Mosses* (3)

Field and laboratory study of the habitat, structure, and identification of representative local forms of algae, fungi, and mosses. Prerequisite: Botany 1 and 2 or Biology 1-2. (Not offered in 1954-55.)

* See also the departments of Biology, Geography, and Zoology.

† Before completing registration for Botany 1, each student must obtain from the representative of the Department an assignment to a laboratory section.

- 109 *Plant Morphology* (3) Palmer
Survey of structure of root, stem, leaf, and flower of seed plants; followed by the application to several of the economically important families. Prerequisite: Botany 1 and 2 or Biology 1-2. Lecture (2 hours); laboratory (2 hours). Afternoon.
- 116 *Plant Growth* (3) Yocum
The functions of plants with special emphasis on the practical problems of growing and of caring for plants. Prerequisite: Botany 1 or Biology 1. Lecture (2 hours); laboratory (2 hours). Afternoon.
- 118 *Physiology of Bacteria and Fungi* (3) Yocum
Lectures, literature reviews, and laboratory studies of the physiology of bacteria and fungi. Prerequisite: Botany 1 and 2 or Biology 1-2. (Not offered in 1954-55.)
- 125-26 *Plant Taxonomy* (3-3) Palmer
A study of the characteristics, phylogeny, and economics of selected families of the flowering plants. Field collection and identification. Prerequisite: Botany 1 and 2 or Biology 1-2. Material fee, \$5. Lecture (1 hour); laboratory and field (4 hours). 1954-55 and alternate years. Evening.
- 131-32 *Mycology* (3-3) Diehl
Lecture (1 hour); laboratory (4 hours). (Not offered in 1954-55.)
- 133-34 *Plant Pathology* (3-3) Diehl
Material fee, \$6 a term. 1954-55 and alternate years. Evening.
- 135-36 *Plant Physiology* (3-3) Yocum
Fall term: mineral and water relations of plants; spring term: organic syntheses and growth. Prerequisite: Chemistry 11-12. Material fee, \$6 a term. 1955-56 and alternate years.
- 138 *Growth Regulators* (3) Yocum
Lectures, literature reviews, and laboratory studies of the physiology of growth regulators and their functions in plants and animals. Prerequisite: Botany 1 and 2 or Biology 1-2. (Not offered in 1954-55.)
- 141-42 *Plant Ecology* (3-3)
Lecture (2 hours); laboratory (2 hours). (Not offered in 1954-55.)
- 143 *Introduction to Plant Geography* (3)
A study of the basic principles and methods of plant geography. Prerequisite: Botany 1 and 2 or Biology 1-2. (Not offered in 1954-55.)
- 144 *The Vegetation of North America* (3)
Lectures, seminars, and laboratory on the characteristic vegetations of North America with emphasis on the United States. Prerequisite: Botany 1 and 2 or Biology 1-2. 1955-56 and alternate years.
- 161 *Soils* (3)
Composition, characteristics, geographic distribution, and uses of soils. (For students interested in plant distribution, ecology, and soils,

Geography 128, *Economic Geography: Agriculture*; 131, *Conservation of Natural Resources*; and 132, *Land Use* are recommended as electives.) (Not offered in 1954-55.)

THIRD GROUP

- 221-22 *Seminar: Taxonomy* (3-3) Smith
(Not offered in 1954-55.)
- 235-36 *Seminar: Physiology* (3-3) Yocum
(Not offered in 1954-55.)
- 241-42 *Seminar: Ecology* (3-3)
(Not offered in 1954-55.)
- 295-96 *Research* (arr.) The Staff
Time, credits, and fees to be arranged. (Also offered 1954 summer term—Botany 295 (3).)
- 299-300 *Thesis* (3-3) The Staff
Time to be arranged. (Also offered 1954 summer term—Botany 299 (3).)

BUSINESS ADMINISTRATION

Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*

Harold Griffith Sutton, M.S., *Professor of Finance*

Joe Lee Jessup, M.B.A., *Professor of Business Administration*

James Carlton Dockeray, Ph.D., *Professorial Lecturer in Business Administration*

Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*

Joseph Leo Krieger, M.B.A., *Professorial Lecturer in Business Administration*

Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*

Eugene Fields, B.S., C.P.C.U., *Professorial Lecturer on Insurance*

John Jay Corson, Ph.D., *Professorial Lecturer in Business Administration*

Merle Talmadge Welshans, Ph.D., *Associate Professor of Business Administration, Executive Officer*

Gordon Gouverneur Barnewall, Ph.D., *Associate Professor of Business Administration*

Sherman Cohen, A.B., LL.B., LL.M., *Lecturer in Business Administration*

Augustus Clark Johnson, A.M., *Lecturer in Business Administration*

John Alexander Scott, M.B.A., *Lecturer in Business Administration*

Bachelor of Arts in Government with a major in Business Administration (School of Government).—For curricula see pages 172-73.

Master of Business Administration (School of Government).—Prerequisite: an acceptable undergraduate major in Business Administration or the equivalent.

Required: the general requirements for the degree as stated on page 180.

Doctor of Business Administration (School of Government).—Prerequisite: a Master's degree in Business Administration or a related field, or the equivalent, and proficiency in Statistics and Accounting to the satisfaction of the Committee on Doctoral Studies.

Required: thirty credit hours of graduate work beyond the Master's level, the passing of a general examination in six fields, and the writing and defending of a dissertation.

Bachelor of Science in Engineering with an option in Business Administration (School of Engineering).—See pages 126-28, 132-33.

Bachelor of Arts in Education with teaching fields in Business Education (School of Education).—Prerequisite: the Education curriculum page 64.

Required: the Business Education option, pages 152-53, and the professional courses listed on pages 158-59.

SECOND GROUP

- 101 *Business Organization and Combination* (3) Owens
Simple and interrelated forms of business enterprise and their control by government. Morning and evening sections. (Also offered 1954 summer term.)
- 102 *Business Management* (3) Owens
The management movement, organization of an enterprise, principles of management and their application to various departments of an enterprise. Morning and evening sections. (Also offered 1954 summer term.)
- 105 *Personnel Management in Industry* (3) Owens, Scott
Organization and work of the personnel department, human relations in business. Morning. (Also offered 1954 summer term.)
Business Administration 105x, same as 105, offered spring term. Evening.
- 106 *Problems in Personnel Management* (3) Owens
Principles of human relations illustrated by cases drawn from business and industry. Prerequisite: Business Administration 105. Evening.
- 109 *Office Management* (3) Johnson
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. Evening.
(Also offered 1954 summer term.)
Business Administration 109x, same as 109, offered spring term. Evening.
- 113 *Real Estate* (3) Cohen
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation. Morning.
- 116 *Urban Transportation* (3)
Local transportation in economic development; regulation, finance, operation, and management of transit services; community planning for streets, highways, parking, and traffic control. (Not offered in 1954-55.)
- 121x *General Insurance* (3) Cohen
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. Prerequisite: Economics 1-2. Morning.
- 123-24 *Property and Casualty Insurance* Fields
A and B (2-2)
The principles and practices of property and casualty insurance with emphasis on the economics of insurance, types of carriers, contract provisions, agency and brokerage, and state regulation and supervision. Prerequisite: Business Administration 121. Evening.
- 125-26 *Property and Casualty Insurance C and D* (2-2)
The principles and practices of property and casualty insurance with emphasis on theory of probability, rates and rating, reserves, financial

statements, and investments; loss adjustment and loss prevention. Prerequisite: Business Administration 123-24. (Not offered in 1954-55.)

127-28 Property and Casualty Insurance

E and F (2-2)

Principles of accounting; principles of business and personal finance; business organization and agency management. Evening.

129-30 Property and Casualty Insurance

G and H (2-2)

Insurance law with particular attention given to construction of insurance contracts, and general commercial law as it relates to contracts, agencies, partnerships, corporations, personal property, real estate and mortgages, negotiable instruments, bankruptcy, bailments, common and private carriers, and negligence. (Not offered in 1954-55.)

131 Business Finance (3)

Welshans

Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2. Morning. (Also offered 1954 summer term.)

Business Administration 131x, same as 131, offered spring term. Evening.

136 Commercial Credit (3)

Welshans

Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1-2. Morning.

138x Investments (3)

Welshans

Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1-2. Evening. (Also offered 1954 summer term.)

141 Principles of Marketing (3)

Barnewall

A survey of marketing, giving particular attention to consumption, retailing, wholesaling, and sales management; the entire marketing structure and its relation to the total economy. Prerequisite: Economics 1-2. Evening. (Also offered 1954 summer term.)

Business Administration 141x, same as 141, offered spring term. Morning.

142 Marketing Problems (3)

Barnewall

Marketing principles applied to specific distribution policy and operating problems of retailers, wholesalers, and manufacturers handling consumer and industrial goods. Prerequisite: Business Administration 141. (Not offered in 1954-55.)

143x Marketing Research (3)

Barnewall

Study of market research methods and techniques; sources of data; the use of market research in business operations. Morning.

145 Sales Management (3)

Barnewall

Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control

- of distribution costs. Prerequisite: Business Administration 141. Morning.
- 146 *Sales Management Problems* (3) Jessup
Problems of marketing executives with respect to planning sales programs, territories, and salesmen's quotas; selection, training, and supervision of sales force. Prerequisite: Business Administration 145. Morning.
- 147 *Advertising* (3) Barnewall
Advertising as a function of marketing and merchandising; evaluation, purchase, criticism, and control of advertising; uses and limitations of advertising as a tool of management. Evening. (Also offered 1954 summer term.)
- 148 *Wholesaling* (3) Barnewall
The wholesale function; organization and types; economics of wholesale authorities. (Not offered in 1954-55.)
- 150 *Principles of Purchasing* (3) Barnewall
Organization for purchasing, purchasing policies, market relationships, selection of merchandise, purchasing information and records. (Not offered in 1954-55.)
- 151X *Retailing* (3) Barnewall
Principles and problems in retail merchandising, including markup, inventory valuation, and expense control; service and personnel problems. Evening.
- 158 *Traffic Management* (3)
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies. (Not offered in 1954-55.)
- 175 *Introduction to Foreign Trade* (3) Ogdon
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1-2. Evening.
- 176 *Exporting and Importing* (3) Ogdon
Policy and operating questions of foreign trade, financing and documentation of shipments. Prerequisite: Business Administration 175. (Not offered in 1954-55.)
- 178 *Foreign Markets* (3) Ogdon
Pattern of world trade by countries and commodities, methods of preparing market surveys, selected regional market analyses. Prerequisite: Economics 1-2. Evening.
- 191 *Business Reports and Analyses* (3) Dockeray
Research in specific business problems and reports for management use. Open to seniors. Evening.

- 195 *Controllership* (3) Jessup
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting, and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1-2. Open to seniors. Evening.

- 198 *Problems in Business Management* (3) Jessup
Principles and methods of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102. Open to seniors. Morning.
Business Administration 198x, same as 198, offered fall term. Evening.

THIRD GROUP

- 231 *Corporate Financial Problems* (3) Welshans
Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization. Evening.

- 232 *Seminar in Business Finance* (3) Welshans
Research in advanced financial problems. Evening. (Also offered 1954 summer term.)

- 241-42 *Seminar in Marketing* (3-3) Barnewall
Research and reports on marketing problems. Evening.

- 268 *Management Engineering* (3) Clewlow
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys, including the study of work measurement, work simplification, management audits, and other management improvement programs. (Not offered in 1954-55.)

- 273-74 *Readings in Business* (3-3) The Staff
Advanced readings in the fields of finance, marketing, and personnel management. (Not offered in 1954-55.)

- 278 *The Dynamics of Business* (3)
An analysis of the structure of American business, including a study of trend and cyclical change in economic activity and their bearing upon governmental policy. (Not offered in 1954-55.)

- 286 *Management in the Armed Forces* (3)
Special problems of military organization and management; applicability of business management techniques to the armed forces. (Not offered in 1954-55.)

- 288 *Executive Leadership* (3) Corson
An examination of the role of the executive in public and private administration. An intensive consideration of the ways the executive accomplishes his objectives by planning, organizing, communicating with and developing staff, and controlling their performance; a balanced review of literature and practical illustrations. Evening.

- 291-92 *Seminar in Business Management (3-3)* Owens
Research on various phases of management, including business, industrial, and personnel management. Evening. (Also offered 1954 summer term.)
- 293-94 *Business Research (3-3)* The Staff
(Not offered in 1954-55.)
- 295 *Controllershship in the Federal Service (3)* Krieger
Function of the controller in federal agencies; special problems analyzed; controller function in government and business. (Not offered in 1954-55.)
- 296x *Seminar in Controllershship (3)* Krieger
Research on advanced problems of the controller in all types of business organization and the Federal Government. Evening.
- 297-98 *Business Policy (3-3)* Jessup
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc. Evening.
- 299-300 *Thesis (3-3)* The Staff
Time to be arranged. (Also offered 1954 summer term—Business Administration 299 (3).)

CHEMISTRY

Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
 Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
 *Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
 Kalervo Rankama, Ph.D., *Professorial Lecturer on Geochemistry*
 Robert Corbin Vincent, Ph.D., *Associate Professor of Chemistry, Acting Executive Officer*
 Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
 ‡William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
 James Willard Harkness, B.S., Ed.M., *Associate Professor of Chemistry*
 Theodore Peter Perros, Ph.D., *Assistant Professor of Chemistry*
 William Edward Schmidt, Ph.D., *Assistant Professor of Chemistry*
 David Gover White, B.Chem.Eng., Ph.D., *Assistant Professor of Chemistry*

Registration.—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections.

Bachelor of Arts or Bachelor of Science with a major in Chemistry (Columbian College—Departmental).—Prerequisite: the Arts and Letters or the Science Curriculum, respectively, in the Junior College, see pages 62 and 63. The following first group courses must be included: Chemistry 11-12, 21, and 22; Mathematics 19 and 27; Physics 5, 6, 7, and 8.

Required: the general requirements, as stated on pages 77-82, including the following second group courses: Chemistry 111-12, 113-14, 122, 151-52, and 135 or 135 (two credit hours). The work of the junior and senior years must be approved by the Department. The German language is strongly recommended for all majors, and both French and German are recommended for students planning to do graduate work.

Master of Arts or Master of Science in the field of Chemistry (Columbian College).—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry from this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The thirty hours of required work must include Chemistry 131-32, 193, 211-12, 251-52, 291-92, 299-300, and the program must include at least four credit hours of laboratory courses. On the basis of failure to pass qualifying examinations given during the first week of classes, a student may be excluded from these required courses and advised to review prerequisite courses. A reading knowledge examination in French or German (German preferred) must be passed before the second half of the work is started.

Doctor of Philosophy (Graduate Council).—See page 91.

Bachelor of Science in Engineering with an option in Chemistry (School of Engineering).—See pages 127-29 and 133. The Chemistry courses required for this degree are the same as those required for the Bachelor of Science degree with a major in Chemistry as itemized above.

* Professorial Lecturer while on leave of absence as Professor 1954-55.
 ‡ On sabbatical leave 1954-55.

Bachelor of Arts in Education with a teaching field in Chemistry (School of Education).—Prerequisite: the Education curriculum, page 64.
Required: the Chemistry option, page 154; and the professional courses listed on pages 158–59.

FIRST GROUP

†3-4 *Survey of Physical Sciences (4-4)*

Schmidt

Survey of physical science. An introduction to the physical sciences including chemistry, physics, astronomy, and geology with emphasis on analysis of scientific method and its achievements rather than on the mechanics of science. A terminal course for non-science majors. Laboratory fee, \$9 a term. Lecture (3 hours), morning; laboratory (3 hours), afternoon.

†11-12 *General Chemistry (4-4)*Van Evera, Harkness,
Perros, White

Chemistry 11-12 is an elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, \$15 a term. Lecture (2 hours); laboratory (4 hours); recitation (1 hour)—morning, afternoon, and evening sections. (Also offered 1954 summer term.)

Chemistry 11x, same as 11, offered spring term. Morning, afternoon, and evening sections.

Chemistry 12x, same as 12, offered fall term. Afternoon and evening sections.

21 *Qualitative Inorganic Analysis (4)*

Vincent

Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, \$15. Lecture (2 hours); laboratory (6 hours)—afternoon and evening sections. (Also offered 1954 summer term.)

Chemistry 21x, same as 21, offered spring term. Afternoon and evening sections.

22 *Quantitative Inorganic Analysis I (4)*

Schmidt

Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, \$15. Lecture (2 hours)—morning and evening sections; laboratory (6 hours)—morning, afternoon, and evening sections.

SECOND GROUP

†111-12 *Physical Chemistry Lectures (3-3)*

Wood

Introduction to physical chemistry. Students registering for Chemistry 111-12 must register concurrently for Chemistry 113-14 unless they already have adequate credit for physical chemistry laboratory. Prerequisite: Chemistry 22 and 152; Mathematics 20; Physics 8. Lecture (3 hours)—morning and evening sections.

†113-14 *Physical Chemistry Laboratory (2-2)*

Wood

Laboratory to accompany Chemistry 111-12. Students registering for Chemistry 113-14 must register concurrently for Chemistry 111-12 unless they already have credit for lectures in physical chemistry.

Laboratory fee, \$15 a term. Laboratory (6 hours)—afternoon and Saturday sections.

122x Quantitative Inorganic Analysis II (4) Schmidt

A continuation of Chemistry 22 including the theory and practice of organic reagents, electrochemistry, and colorimetry in the analysis of more complex materials. Prerequisite: Chemistry 22. Laboratory fee, \$15. Lecture (2 hours)—afternoon and evening sections; laboratory (6 hours)—morning and evening sections.

†131-32 Inorganic Chemistry (2-2) Naeser

Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the descriptive chemistry of the more common elements. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 111-12 and 113-14. Evening.

135-36 Inorganic Chemistry: Preparations (2-2) Perros

Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152; prerequisite or concurrent registration: Chemistry 111-12 and 113-14. Laboratory fee, \$15 a term. Laboratory (6 hours), evening.

Chemistry 135x, same as 135, offered spring term. Evening.

†151-52 Organic Chemistry (4-4) Wrenn

Chemistry of the compounds of carbon. Credit is not given for Chemistry 151 until Chemistry 152 is completed. Prerequisite: Chemistry 21. Chemistry 151.—Laboratory fee, \$9. Lecture (3 hours)—morning and evening sections; laboratory (3 hours)—afternoon and evening sections. Chemistry 152.—Laboratory fee, \$15. Lecture (2 hours)—morning and evening sections; laboratory (6 hours)—afternoon and evening sections. (Also offered 1954 summer term.)

155x Organic Chemistry: Preparations (2 or 3) Wrenn

The synthesis of organic compounds and the application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151-52. Prerequisite: Chemistry 22 and 152. Laboratory fee, \$9 a credit hour. Time to be arranged.

156x Qualitative Organic Analysis (3) Wrenn

The identification of pure organic compounds, the separation of mixtures, and the identification of their components. Required of all students planning thesis work in the field of Organic Chemistry. Prerequisite: Chemistry 22 and 152. Laboratory fee, \$15. Lecture (1 hour); laboratory (6 hours)—evening.

191x History of Chemistry (2) Perros

The development of chemistry, and the biographies of eminent contributors to the science. Prerequisite: Chemistry 22 and 152. 1955-56 and alternate years.

193 Chemical Literature (1) Wrenn

A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22 and 152; prerequisite or concurrent registration: Chemistry 111-12 and 113-14. Evening.

THIRD GROUP

- 203 *Chemical Kinetics* (2) Wood
The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112. 1955-56 and alternate years.
- 211-12 *Advanced Physical Chemistry* (2-2) Wood
Development of the principles of thermodynamics and kinetic theory and their application to chemical problems. Prerequisite: Chemistry 111-12 and 113-14. Evening.
- 216 *Statistical Mechanics* (3)
An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 212, or permission of instructor. 1954-55 and alternate years. Evening.
- 221-22 *Advanced Analytical Chemistry* (2 or 3) Schmidt
A study of the theory and application of chemical and physico-chemical methods of analysis. Prerequisite: Chemistry 22 and 122. The lectures may be taken for 2 credits a term without the laboratory work. Laboratory fee, \$9 a term. Lecture (2 hours); laboratory (3 hours—optional). (Not offered in 1954-55.)
- 226 *Quantitative Organic Analysis* (3) Vincent
Micro and semi-micro procedures. Prerequisite: Chemistry 122 and 152; permission of the instructor. Laboratory fee, \$15. (Not offered in 1954-55.)
- †231-32 *Special Topics in Inorganic Chemistry: the Chemistry of the Less Familiar Elements* (2-2) Perros
Prerequisite: Chemistry 132 and 152. 1954-55 and alternate years. Evening.
- 233-34 *Radiochemistry* (2-2)
The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 131-32. (Not offered in 1954-55.)
- 237-38 *Geochemistry* (2-2) Rankama
A comprehensive study of the principles and laws of geochemistry pertaining to the abundance, relationships, and distribution of the elements in the various rock and mineral species. Prerequisite: Chemistry 112 or a Bachelor of Science degree with a major in geology. Evening.
- 251-52 *Advanced Organic Chemistry* (3-3) Wrenn
The syntheses, reactions, and properties of carbon compounds; the fundamental theories of organic chemistry. Prerequisite: Chemistry 152; prerequisite or concurrent registration: Chemistry 111-12, 113-14, and 193. Evening.
- 253 *Advanced Synthetic Organic Chemistry* (3) Wrenn
A study of the reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Not offered in 1954-55.)

- 257 *Theoretical Organic Chemistry* (3) Sager
Prerequisite: Chemistry 252. A survey of modern theories of organic chemistry with emphasis on reaction mechanisms. 1955-56 and alternate years.
- 291-92 *Seminar: Recent Developments in Chemistry* (1-1) The Staff
Individual investigations of special problems. All students registered for a Master's degree in Chemistry are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work may be obtained by registering for this course during the last two terms of residence; this credit, however, is based upon the seminar work during the entire period of residence. Evening.
- 295-96 *Research* (arr.) The Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, \$6 a credit hour. Time and credits to be arranged. (Also offered 1954 summer term.)
- 299-300 *Thesis* (3-3) The Staff
Laboratory fee, \$15 a term. Time to be arranged. (Also offered 1954 summer term.)

CIVIL ENGINEERING

- Carl Hugo Walther, B.E., M.C.E., *Professor of Civil Engineering*
 *Bruce Douglas Greenshields, C.E., Ph.D., *Professor of Civil Engineering*
 Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Professor of Civil Engineering*
 Waldo Edward Smith, B.E. in C.E., M.S. in C.E., *Professorial Lecturer in Civil Engineering*
 Raymond Pugh Eyman, C.E., *Associate Professor of Civil Engineering*
 Haaren Albert Miklofsky, B.C.E., M.Eng., D.Eng., *Associate Professor of Civil Engineering, Executive Officer*
 Ralph Edward Fuhrman, B.S. in C.E., M.S. in Eng., *Lecturer in Civil Engineering*
 Garrett Carper Tewinkel, B.S. in M.E., M.C.E., *Lecturer in Civil Engineering*
 Demetrios Aremistos Polychrome, A.B., M.S. in Eng., Sc.D., *Lecturer in Civil Engineering*
 Vincent Harry Hennessy, B.C.E., *Lecturer in Civil Engineering*
 Richard Henry Welles, B.C.E., *Lecturer in Civil Engineering*
- Bachelor of Civil Engineering (School of Engineering).*—See pages 127-29 for statement of requirements.
Master of Science in Engineering (School of Engineering).—See pages 134-35 for statement of requirements.
Civil Engineer (School of Engineering).—See page 135 for statement of requirements.

FIRST GROUP

- 2 *Plane Surveying (2)* Eyman
 Principles, methods, and instruments used in surveying; with field work. Prerequisite: Trigonometry. Surveying fee, \$12. Lecture (1 hour)—field work (3 hours)—afternoon and Saturday sections.
- 21 *Analytical Mechanics:* Walther and Staff
Statics (2)
 Composition and resolution of forces; axial stresses, centroids; friction. Prerequisite: Physics 6; prerequisite or concurrent registration: Mathematics 20. Morning and evening sections.
 Civil Engineering 21x, same as 21, offered spring term. Evening.
- 22 *Analytical Mechanics:* Greenshields and Staff
Dynamics (3)
 Kinematics of a particle; kinetics of a body in translation, rotation, and plane motion; work and energy; impulse and momentum; simple

* On leave of absence fall term 1954-55.

vibrations. Prerequisite: Civil Engineering 21. Morning and evening sections.

Civil Engineering 22x, same as 22, offered fall term. Evening.

- 23 **Higher Surveying (4)** Eyman
Elements of geodesy, triangulation, topography, hydrography, and precise and trigonometric leveling, with field work. Prerequisite: Civil Engineering 2. Surveying fee, \$12. Lecture, laboratory, and field work. 1954-55 and alternate years, Saturday morning; 1955-56 and alternate years, afternoon.

- 24 **Elementary Photogrammetry (3)** Tewinkel
History and development of photogrammetry; fundamental principles, methods, and instruments used in photographic surveying and production of maps; photographic interpretation; principles of stereoscopy. Laboratory work with photographs and instruments in determination of scale, tilt, relief, and map plotting. Prerequisite: Civil Engineering 23; Physics 6. Laboratory fee, \$3. Evening.

- 25-26 **Engineering Materials (2-2)** Eyman
Emphasis on properties and uses of nonmetallic materials such as cements, fuels, and plastics; and metallic materials including steel, copper, aluminum, and alloys. Prerequisite or concurrent registration: Chemistry 12. Morning and evening sections.

SECOND GROUP

- 123 **Strength of Materials (3)** Walther, Welles
Tension, compression, shear, flexure, and torsion; deflections; combined and working stresses. Prerequisite: Civil Engineering 22. Morning and evening sections.

- 136 **Hydraulics (3)** Mason, Walther
Hydrostatics, flow through pipes and open channels, laminar and turbulent flow. Prerequisite: Civil Engineering 22. Morning and evening sections.

- 140 **Materials and Hydraulics Laboratory (2)** Greenshields, Hennessy
Determination of the properties of materials by mechanical tests, and a study of the flow of fluids. Prerequisite: Civil Engineering 123; prerequisite or concurrent registration: Civil Engineering 26 and 136. Laboratory fee, \$9. Laboratory (3 hours)—afternoon and evening sections.

- 141 **Graphic Statics (3)** Miklofsky
Fundamental principles, analyses of beams, determination of stresses in roof trusses and framed bents. Prerequisite or concurrent registration: Civil Engineering 123. Drafting-room fee, \$2. Lecture (2 hours); drafting room (3 hours). 1954-55 and alternate years, afternoon; 1955-56 and alternate years, evening.

- 142 **Bridge Stresses (3)** Miklofsky
Determination of stresses in modern types of bridge trusses. Prerequisite: Civil Engineering 141. Drafting-room fee, \$2. Lecture (2 hours); drafting room (3 hours). 1954-55 and alternate years, afternoon; 1955-56 and alternate years, evening.

- 147-48 **Structural Design (2-2)** Walther
Computations and drawings for the design of steel structures. Pre-requisite: Civil Engineering 142. Drafting-room fee, \$5 a term. Drafting room (6 hours). 1954-55 and alternate years, evening; 1955-56 and alternate years, afternoon.
- 149-50 **Concrete and Masonry Construction (3-3)** Miklofsky
Plain concrete, general properties and theory of reinforced concrete, foundations, and retaining walls. Prerequisite: Civil Engineering 25 and 123. Civil Engineering 149, laboratory fee, \$9; Civil Engineering 150, drafting-room fee, \$2. Lecture (2 hours); laboratory or drafting room (3 hours). 1954-55 and alternate years, evening; 1955-56 and alternate years—lecture, morning; laboratory or drafting room, afternoon.
- 151-52 **Statically Indeterminate Structures (2-2)** Miklofsky
A study of such structures as continuous spans, rigid frames, and arches by methods of work, slope deflection, and moment distribution. Prerequisite: Civil Engineering 142. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.
- 164 **Highway Engineering (3)** Greenshields
Highway economics, location, construction, and maintenance. Prerequisite: Civil Engineering 25. 1954-55 and alternate years, evening; 1955-56 and alternate years, morning.
- 181-82 **Water Supply and Sewerage (3-3)** Walther
Collection, storage, purification, and distribution of water; sewerage systems and treatment of sewage. Prerequisite: Civil Engineering 130; Chemistry 12. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.
- 187-88 **Engineering Contracts and Specifications (2-2)** Eymann
Contract essentials, types, and legal principles; analysis and preparation of specifications. Prerequisite or concurrent registration: Civil Engineering 25-26. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.
- 189-90 **Civil Engineering Proseminar (1-1)** Greenshields
Late afternoon.
- 192 **Soil Mechanics (3)** Miklofsky
The basic concepts of the behavior of soil as an engineering material. Prerequisite: Civil Engineering 25, 123, and 136. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.

THIRD GROUP

- 201 **Advanced Mechanics of Materials (3)** Walther
Advanced topics in the mechanics of materials. Stresses at a point, thick cylinders, general bending, torsion, localized stress, and stress concentration. 1954-55 and alternate years. Evening.

- 202 *Applied Elasticity* (3) Walther
The theory of elasticity as applied in three-dimensional analysis of stress, strain, torsion, and bending. 1954-55 and alternate years. Evening.
- 203 *Foundation Problems* (3) Miklofsky
The integration of structural theory and soil mechanics, as applied to foundation, retaining wall, slope stability, and drainage problems. The interrelationship of structural action and soil stability is emphasized. 1955-56 and alternate years.
- 204 *Theory of Structures* (3) Miklofsky
Advanced analysis and design of indeterminate structures, such as, continuous and suspension bridges, high building frames, arches, rigid frames, and columns. 1955-56 and alternate years.
- 205 *Prestressed Concrete Theory* (3) Polychrome
A study of the theory and applications of prestressed concrete, including the design of prestressed concrete structures. 1955-56 and alternate years.
- 299-300 *Thesis* (3-3) The Staff
Time to be arranged.

CLASSICAL LANGUAGES AND LITERATURES

John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures, Executive Officer*

The Department of Classical Languages and Literatures offers two types of courses: (1) those which illustrate the literary, linguistic, and cultural backgrounds of Western Civilization, and for which no knowledge of the ancient languages is required. These courses are designed to supplement and strengthen the broad general backgrounds of students who plan to concentrate in the fields of English or other literatures, History, Art, Drama, or Philosophy, or of those who wish to increase their general knowledge and appreciation of the bases of the great humanistic traditions as part of a well-rounded education. (2) Two years of Latin and two years of Greek are offered alternately for those who wish to fulfill the language requirements of the Junior College as set forth on pages 61-62.

COURSE IN ENGLISH TRANSLATION

- 71-72 *Greek and Roman Backgrounds in Literature* Latimer
(3-3)
Selected Greek and Roman masterpieces and their literary influence.
(Not offered in 1954-55.)

LANGUAGE COURSES

- †1-2 *First-year Latin* (3-3) Latimer
Functional presentation of the essentials of the language, with appropriate reading selections. Development of English derivatives, and introduction to Roman life and literature. 1955-56 and alternate years.
- †3-4 *Second-year Latin* (3-3) Latimer
A continuation of the preceding course, but with increased emphasis on reading Latin selections which illustrate Roman life and literature. Continuation of vocabulary building in English. Prerequisites: Classical Languages 1-2 or two years of high school Latin. Evening.
- †11-12 *First-year Greek* (3-3) Latimer
Essentials of grammar. Reading selections from the New Testament and patristic Greek. Offered alternately with Classical Languages 1-2. Evening.
- †13-14 *Second-year Greek* (3-3) Latimer
Review of grammar. Emphasis on rapid reading of selections from Hellenistic and patristic Greek. 1955-56 and alternate years.

RELATED COURSE IN ANOTHER DEPARTMENT

Art 121-22 *World History of Art* (3-3)

DERMATOLOGY AND SYPHILOLOGY

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology, Executive Officer*

George William Creswell, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Hayden Kirby-Smith, B.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Theodore Claremont Chen Fong, M.D., *Associate in Dermatology and Syphilology*

James Quincy Gant, Jr., M.S. M.D., *Associate in Dermatology and Syphilology*

Wendell Melvin Willett, M.D., *Associate in Dermatology and Syphilology*

Reuben Goodman, M.D., *Clinical Instructor in Dermatology and Syphilology*

313-14 *Dermatology and Syphilology* The Staff
Lectures on diseases of the skin and syphilis. One hour a week.

316 *Neurosyphilis* Fong
Lectures, clinical demonstrations, and practical diagnostic and therapeutic procedures.

317-18 *Clinic* The Staff
Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407-8 *Clinic* The Staff
Dermatology and syphilology in infants and children. Two hours a week. Childrens Hospital.

409-10 *Clinic* The Staff
Clinical demonstrations, diseases of the skin. Two hours a week. University Hospital.

ECONOMICS

*Arthur Edward Burns, Ph.D., *Professor of Economics*
 Donald Stevenson Watson, Ph.D., *Professor of Economics*
 Gerhard Colm, Dr. rer. pol., *Professorial Lecturer in Economics*
 Ralph Aubrey Young, M.B.A., Ph.D., *Professorial Lecturer in Economics*
 Jacques Jacobus Polak, Ph.D., *Professorial Lecturer in Economics*
 George Wythe, Ph.D., *Professorial Lecturer in Economics*
 Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
 James Coogan, Ph.D., *Assistant Professor of Economics, Executive Officer*
 Walter David Fackler, A.B., *Assistant Professor of Economics*
 Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
 Charles David Stewart, M.S.S., LL.B., *Lecturer in Economics*
 George Jaszi, Ph.D., *Lecturer in Economics*
 Frederick Thorp Moore, Ph.D., *Lecturer in Economics*

Bachelor of Arts with a major in Economics (Columbia College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, including Economics 1-2 and Statistics 51, see page 62.

Required: the general requirements as stated on pages 77-82 and (1) Economics 101-2 and 121 and fifteen additional hours in second-group courses to be selected with the approval of the adviser; (2) Economics 198 which may be taken upon the completion of twenty-one of the required hours in the major; (3) Statistics 111-12; (4) nine credit hours of other second-group courses selected from the following departments—Accounting, Business Administration, History, Philosophy, Political Science, Sociology, and Statistics.

Bachelor of Arts with a major in Latin American Civilization (Columbia College—Field-of-study).—See the Department of History, page 274.

Master of Arts in the field of Economics (Columbia College).—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 83-86. The thirty hours of required work must include (1) twelve credit hours in courses numbered 201-208, 213, 214, 251 and (2) six credit hours in two of the following fields: public finance, monetary and fiscal policy (Economics 223-24, 261-62); labor economics (Economics 241, 244); economic policy (Economics 265, 266); international relations (Economics 281-82, 290).

Doctor of Philosophy (Graduate Council).—See page 91.

Bachelor of Arts in Government with courses in Economics (School of Government).—See pages 170-73.

Master of Arts in Government with a major in Economic Policy (School of Government).—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 174-76, 177. The thirty hours of required work must include Economics 265, 266, and the thesis, Economics 297-98.

* On sabbatical leave spring term 1954-55.

For information concerning other Master of Arts curricula in the School of Government with courses in Economics, see pages 174-80.

Bachelor of Science in Engineering with an option in Economics (School of Engineering).—See pages 127-29, 133.

FIRST GROUP

1-2 *Principles of Economics** (3-3)

The Staff

Survey of the major economic principles, institutions, and problems in contemporary economic life. Economics 1 is prerequisite to Economics 2. Morning and evening sections. (Also offered 1954 summer term.)

Economics 1x, same as 1, offered spring term. Morning and evening sections.

Economics 2x, same as 2, offered fall term. Evening.

SECOND GROUP

101-2 *Economic Analysis* (3-3)

Coogan, Watson

Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services; welfare economics. Economics 101 is prerequisite to 102. Morning and evening sections. (Also offered 1954 summer term Economics 101 (3).)

Economics 101x, same as 101, offered spring term. Evening.

104 *History of Economic Thought* (3)

Fackler

History of the major schools of economic thought; influence of changing problems on the development of economic theory. 1955-56 and alternate years.

105 *Business Cycles* (3)

Coogan

Analysis of strategic factors in economic instability, survey of recent business cycle theories. Evening.

121 *Money and Banking* (3)

Acheson

Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institution; international aspects of money; current financial problems. Morning and evening sections. (Also offered 1954 summer term.)

Economics 121x, same as 121, offered spring term. Evening.

123 *Monetary Theory and Policy* (3)

Acheson

Principal contemporary theories, background of recent monetary policy. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.

124 *Financial Institutions and Economic Development* (3)

Acheson

Evolution and growth of the money-mechanism in United States economy, changing relationships of money markets to role of investment, special emphasis on monetary framework for national economic development. Morning.

126 *Foreign Exchange and International Finance* (3)

Acheson

The theory and practice of the foreign exchanges; current methods of international transfer. 1955-56 and alternate years.

* Economics 1-2 is prerequisite to all other courses in Economics.

- 133 *The Economy of the Soviet Union* (3) Coogan
Development and main features of the economic life of the Soviet Union. (See also History 146, 246, and Geography 196.) 1955-56 and alternate years.
- 141-42 *Labor Economics* (3-3)
Wages, hours, and employment; labor organizations; labor legislation and the federal administrative boards. Evening.
- 161-62 *Public Finance and Taxation* (9-3) Fackler
General survey of government expenditures, sources and methods of taxation, economic effects of expenditures and taxes, and of government debt policies. Morning.
- 165 *Government Control of Economic Activity* (3) Watson
Changing role of government in promoting and regulating economic activity, types and spheres of control. Evening.
- 166 *Comparative Systems of Economic Reform* (3) Watson
Critical analysis of the major theories of economic and social reform, with special attention to their origins and backgrounds. Summer term 1954.
- 171 *Economics of Transportation* (3) Kennedy
History, organization, competition, rates, and regulation of motor, air, rail, and water carriers. (Not offered in 1954-55.)
- 172 *Economics of Public Utilities* (3) Kennedy
Regulation, valuation, rate making, development, and public policy. (Not offered in 1954-55.)
- 181-82 *International Economics* (3-3) Schmidt
Survey of world economics, theories of international trade, analysis of international economic problems, and the international organizations. Afternoon and evening sections. (Also offered 1954 summer term.)
- 183-84 *International Economic Policy* (3-3) Schmidt
Historical and theoretical analysis of tariffs, exchange rates, exchange and trade control, discrimination, and capital movements; policies related thereto. (Not offered in 1954-55.)
- 185-86 *Economic History and Problems of South America* (3-3) Wythe
Evolution and existing structure of the economies of the South American Republics, with particular emphasis on basic factors affecting development and prospects. (See also Geography 192.) Evening.
- 187-88 *Economic History and Problems of Middle America* (3-3) Wythe
Economic structure and development of Mexico, Central America, and the Antilles with attention both to individual country situations and to regional and over-all problems. (See also Geography 191.) 1955-56 and alternate years.

198 *Readings and Research* (3)

The Staff

Comprehensive survey of economics. Open only to students whose major is economics and who have completed twenty-one hours of course work in economics. Time to be arranged.

Economics 198x, same as 198, offered spring term. Time to be arranged.

THIRD GROUP

201-2 *History and Literature of Economic Thought* (3-3) Burns

Critical analysis and interpretation of the development and the literature of economic thought, origins and problems of the major types of theory, and their relation to present problems and policies. Evening.

203-4 *Contemporary Economic Theory* (3-3) Watson

The contributions of Marshall, Chamberlin, Robinson, Hicks, and others. Evening.

205 *Theory of Employment and Income* (3) Polak

(Formerly Economics 206)

Determinants of the level of employment and income, Keynesian and classical systems contrasted, and recent literature on the subject. Evening.

206 *Business Cycle Theory* (3) Polak

(Formerly Economics 205)

The general characteristics of business cycle theories and discussion of particular theories. Evening.

208x *The National Income* (3) Jaszi

The theory of economic aggregates, measurement and policy aspects of national income. Evening.

211 *Readings in Advanced Economics* (3) The Staff

Integration and coordination of advanced economic theories. Evening.

Economics 211x, same as 211, offered spring term. Time to be arranged.

213 *Economic Thought in the Twentieth Century* (3) Burns

Continuation of Economics 201-2. The principal trends in economic thought during the present century.

Summer term 1954.

214 *Quantitative Economics* (3) Moore

Social accounting: forms and uses; budget and income accounts; money-flows and input-output analysis; aggregative econometric models; programming, single-equation estimating techniques; analysis of changing composition of economic aggregates. (Not offered in 1954-55.)

219-20 *Managerial Economics* (3-3) Watson

Analysis of price, production, and inventory policies of business firms. Evening.

223-24 *Monetary Policy and Central Banking* (3-3) Young

The money system in its relation to national income, monetary policies of the Federal Reserve and other central banking systems. Evening.

- 241 *Labor Economics* (3) Stewart
Implications of industrialism for labor, questions of social policy, contributions of economics to solutions of labor problems. Evening.
- 244 *Labor Relations* (3) Stewart
The collective bargaining contract and the elements comprising it; analysis of the policies of labor and of management. Evening.
- 251 *Theories of Economic Development* (3) Polak
Growth and change in economic activity, capital accumulation, innovations in technology and business organization. Summer term 1954.
- 261-62 *Public Finance and Fiscal Policy* (3-3) Colm
Survey of the major contributions to the theory and doctrines of public finance. Special problems: deficit financing; current tax problems; and federal, state, and local relationships. Evening.
- 265 *Theory of Economic Policy* (3) Watson
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. Evening.
- 266 *Problems of Governmental Economic Policy* (3) Watson
The execution of economic policies as they are affected by the processes of government. Evening.
- 268 *Economic Organization of the Soviet Union* (3) Coogan
Development of the Russian economy; organization under the Soviets; policies and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 146, 246, and Geography 196.) Not offered in 1954-55.
- 281-82 *International Economics* (3-3) Schmidt
The modern theories of international economics, the variables determining the balance of payments, techniques to obtain balance-of-payments equilibrium. Evening.
- 285-86 *Economic Development of Latin America* (3-3) Wythe
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological pre-conditions of investment. Evening.
- 287-88 *Latin America: Trade and Commodity Policy* (3-3) Wythe
Tariffs and exchange control systems, bilateral and general commercial agreements, terms of trade. 1955-56 and alternate years. Evening.
- 290 *Problems in International Financial Policy* (3) Acheson
International financial problems in recent decades and analysis of external economic problems of several countries. Evening.
- 297-98 *Thesis* (School of Government majors) (3-3) The Staff
- 299-300 *Thesis* (3-3) The Staff

EDUCATION

James Harold Fox, A.M., Ed.D., *Professor of Education, Executive Officer*

Burnice Herman Jarman, A.M., Ed.D., *Professor of Education*

Blake Smith Root, A.M., Ed.D., *Professor of Education*

Ralph Windsor Ruffner, A.M., Ed.D., *Professor of Education*

Meredith Chester Wilson, B.S., *Adjunct Professor of Education*

Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*

John Frederick Brougher, A.M., Ed.D., *Professorial Lecturer in Education*

Frances Holliday, A.M., Ed.D., *Professorial Lecturer in Education*

Anthony La Buc, B.S., Ed.M., *Associate Professor of Education*

Mary Ellen Coleman, A.M., *Assistant Professor of Education*

Madaline Kinter Remmlein, Ph.D., J.D., *Lecturer in Education*

LuVerne Crabtree Walker, A.M., *Lecturer in Education*

Florence Mary Lumsden, A.M., Ed.D., *Lecturer in Education*

William Samuel Rumbough, A.M., Ed.D., *Lecturer in Education*

Raymond Ray Reed, A.M., *Lecturer in Education*

Joseph Bueol Johnson, A.M., Ed.D., *Lecturer in Education*

Mary Louise Collings, A.M., *Lecturer in Education*

Grover LaMarr Angel, A.M., Ed.D., *Lecturer in Education*

Eugenia Campbell Nowlin, A.M., *Lecturer in Education*

Dicie Cassady Woodson, A.M., *Lecturer in Education*

Gladys Gardner Jenkins, A.M., *Lecturer in Education*

CONSULTANTS IN RESEARCH

Wesley Earl Armstrong, M.S., Ed.D., *Chief for Teacher Education, U. S. Office of Education*

John Robert Ludington, Ph.D., *Specialist of Industrial Arts, U. S. Office of Education*

Francis James Brown, Ed.D., *Staff Associate, American Council on Education*

FIELD SERVICE COORDINATOR

Helen King Finlay, A.M., *Supervisor, Secondary Education, Arlington County, Virginia*

Bachelor of Arts in Education (School of Education).—Prerequisite: the Education curriculum in the Junior College or the equivalent, or a certificate of graduation from an approved normal school or the equivalent, see page 64.

Required: the satisfactory completion of a program of at least sixty-six credit hours in addition to the general education background courses in the Junior College curriculum. Each program is planned individually to meet the certification requirements of the student, see pages 152-59.

Master of Arts in Education (School of Education).—Prerequisite: a Bachelor's degree from an accredited institution. Programs are planned individually. The following areas of specialization are available: (1) school administration—secondary school principalship, or elementary school principalship; (2) adult education; (3) secondary education—the senior or junior high school; (4) elementary education—intermediate grade or early childhood education; (5) agricultural extension education; (6) curriculum; (7) employee training; (8) guidance.

Doctor of Education (School of Education).—See pages 162-64.

A Reading Clinic

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for diagnosis, \$25; for individual lesson, \$3.50; for group lesson, \$2.50; material fee, \$3.

Coleman and Staff

SECOND GROUP

109-10 Learning and Teaching (3-3)

For the general student as well as the prospective teacher. Fall term: nature of learning approached through the study of actual classroom situations. Spring term: nature of teaching approached through observation of typical classroom situations. Lecture (2 hours), conference (one hour)—afternoon and evening sections; field work (2 hours)—to be arranged. (Also offered 1954 summer term.)

Ruffner

III-12 Elementary School Curriculum (3-3)

For seniors in the elementary school curriculum. Principles of elementary education, including general classroom procedures and common teaching skills. Fall term: special emphasis upon materials and methods in language arts, including reading, writing, spelling, and speech. Spring term: special emphasis upon materials and methods in social studies, science, and arithmetic. Prerequisite: Education 109-10 and 121-22. Late afternoon.

La Bue

113 Elementary School Art (3)

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Material fee, \$3. Lecture (2 hours)—evening; field work (2 hours)—to be arranged.

Nowlin

114 Elementary School Music (3)

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Lecture (2 hours)—evening; field work (2 hours)—to be arranged.

Reed

115 Elementary School Classroom Procedures (3)

For experienced teachers. Survey of current classroom practices with particular attention to the determination of children's needs and interests, providing for individual differences, and evaluation. (Not offered in 1954-55.)

- 116 *Elementary School Social Studies* (3)
For experienced teachers. Content and methods of teaching. (Not offered in 1954-55.)
- 117 *Elementary School Science* (3)
For experienced teachers. Materials and methods. (Not offered in 1954-55.)
- 120 *Elementary School Arithmetic* (3) Woodson
For experienced teachers. Content, materials, and methods.
Summer term 1954.
- 121-22 *Society and the School* (3-3) Angel
For the general student as well as the prospective teacher. Fall term: the local, national, and international roles of education; cooperation of the school with other community agencies. Spring term: organization and operation of schools; principles and functions. Lecture (2 hours), conference (1 hour)—afternoon and evening sections; field work (2 hours)—to be arranged. (Also offered 1954 summer term.)
- 128 *Children's Literature* (3) Walker
For juniors in the elementary school curriculum. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 29. Lecture (2 hours)—evening; field work (2 hours)—to be arranged.
- 131 *Common Teaching Skills* (3) Root
For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, discipline, the homeroom, activity sponsorship, public relations. Prerequisite: Education 109-10 and 121-22. Early afternoon.
- †133-34 *Observation and Student Teaching* Root, La Bue
(3-3 to 6)
For seniors in the elementary or the secondary school curriculum. Education 134, student-teaching fee, \$30. Admission by permission of the instructor. Prerequisite: Education 109-10 and 121-22. Time to be arranged individually.

SPECIAL METHODS COURSES *

To be elected in the senior year after substantial preparation in the teaching fields concerned by students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

* Prerequisite to all special methods courses: Education 109-10, 121-22, and 131. Additional prerequisites are stated under each course.

- 136 *Teaching English* (2 to 4) Lumsden
Prerequisite*: eighteen credit hours of English. Lecture (2 hours)—
evening; field work (2 hours)—to be arranged.
- 138 *Teaching Social Studies* (2 to 4) Root
Prerequisite*: twenty-four credit hours of social studies. Lecture (2
hours)—evening; field work (2 hours)—to be arranged.
- 140 *Teaching Mathematics* (3) Weida
Prerequisite*: Mathematics through calculus. Late afternoon.
- 144 *Teaching Science* (2 to 4) Rumbough
Prerequisite*: twenty-four to forty credit hours of science. Lecture (2
hours)—late afternoon; field work (2 hours)—to be arranged.
- 146 *Teaching Foreign Languages* (2 to 4) Doyle, Keating
Prerequisite*: eighteen credit hours of one foreign language. Late
afternoon.
- 148 *Teaching Home Economics* (2) Kirkpatrick
Prerequisite*: thirty credit hours of Home Economics. Time to be
arranged.
- 150 *Teaching Business Subjects* (2) Shott
Prerequisite*: thirty credit hours of business education. Time to be
arranged.

THIRD GROUP ‡

- 205-6 *The Curriculum*§ (3-3) Bish
For experienced teachers. Fall term: curriculum foundations and
issues; comparison of curriculum patterns. Spring term: principles
and procedures in curriculum development; group consideration of
student problems. Saturday morning.
- 207 *Curriculum Materials*§ (3) Bish
For experienced teachers. The study and construction of courses of
study, resource units, classroom teaching aids, and inexpensive mate-
rials; direct application to students' own situations.
Summer term 1954.
- 209-10 *Child Growth and Development*§ (3-3) La Bue
Basic factors in human growth and development and their relation to
learning and teaching. Related practical experience in studying chil-
dren; class analyses of procedures and results. Saturday morning.
(Also offered 1954 summer term—Education 209 (3) Jenkins.)
- 212 *Evaluation in Education*§ (3) Ruffner
Concept of evaluation, relationship between evaluation of ends and
means, steps involved in the evaluation of learning outcomes. As the

* Prerequisite to all special methods courses: Education 109-10, 121-22, and 131. Addi-
tional prerequisites are stated under each course.

‡ A degree from an accredited institution is prerequisite to all third-group courses.

§ Prerequisite: adequate professional preparation

course progresses each student develops solutions for evaluation problems related to his work situation. Evening. (Also offered 1954 summer term.)

- 213-14 *History of Education* (3-3) Jarman
Fall term: the European backgrounds of American education. Spring term: the evolution of the American school system. Evening.
- 215 *Education of the Exceptional** (3) La Bue
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance. Evening.
- 217-18 *Contemporary Problems in Education** (3-3) Jarman
Fall term: designed to help students formulate a personal philosophy of education. Spring term: social foundations of education—a study of the forces that shape the policies and offerings of the school. Evening. (Also offered 1954 summer term—Education 218 (3).)
- 219 *Recent Developments in Elementary Education** (3)
For experienced teachers. New areas of emphasis, changing techniques of working with children, curriculum trends, review of recent literature. (Not offered in 1954-55.)
- 220 *Intermediate Grade Education** (3) Holliday
A study of the curriculum and methods of teaching in the intermediate grades, based upon a growing understanding of the child and his environment.
Summer term 1954.
- 221-22 *Early Childhood Education** (3-3)
For experienced teachers. Fall term: nursery school and kindergarten education. Spring term: education in the primary grades. (Not offered in 1954-55.)
- 223-24 *Reading Problems** (3-3) Coleman
For experienced teachers. A clinical approach to reading difficulties on elementary and secondary school levels. Demonstrations and observations, with clinic cases. Evening.
- 225 *Elementary School Reading* (3) Coleman
Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic.
Summer term 1954.
- 227-28 *Elementary Education** (3-3) La Bue
For experienced teachers. Fall term: elementary school programs, objectives, common characteristics, and major issues. Spring term: current methods and materials in teaching the several instructional areas and the co-curriculum. Evening.

* Prerequisite: adequate professional preparation.

- 231 *Secondary School Classroom Procedures** (3) Bish
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. Evening. (Also offered 1954 summer term.)
- 233x *Audio-visual Education** (3) J. Johnson
Selection and use of audio-visual aids, management of materials and equipment. Material fee, \$5. Lecture (2 hours), laboratory (2 hours)—Saturday morning.
- 239 *Teaching the Core Curriculum** (3) Bish
An examination and study of classroom teaching procedures appropriate to the core program. (Not offered in 1954-55.)
- 243 *Human Relations in the Classroom** (3)
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Not offered in 1954-55.)
- 251 *Guidance in Secondary Schools** (3) Brougher
Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. Saturday morning.
- 254 *The Junior High School** (3) Bish, Root
Purposes, organization, core programs, guidance, developing course of study, extra-classroom activities. (Not offered in 1954-55.)
- 255-56 *Secondary Education** (3-3) Root
Fall term: current proposals for the reorganization of secondary education. Spring term: current problems in each of the subject-matter fields. Evening. (Also offered 1954 summer term.)
- 263-64 *Employee Training* (3-3) Root
Fall term: nature and purposes, organization and administration of programs—orientation, executive, supervisory, apprentice, clerical, skills; training media and techniques; coordination with other management functions. Spring term: current practices, operating policies, and programs of selected organizations. Prerequisite: adequate professional preparation or two years of experience in employee training. Evening.
- 271 *The Teacher and School Administration** (3) Fox
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. Evening.
- 272 *The Teacher and School Supervision** (3) Fox
Nature, organization, human relationships, and techniques. Evening. (Also offered 1954 summer term.)

* Prerequisite: adequate professional preparation.

- 276 *Seminar: Public Relations in School Administration** (3) Root
Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy-making.
Summer term 1954.
- 278 *School Law** (3) Remmlein
Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Not offered in 1954-55.)
- 279-80 *Adult Education** (3-3) Ruffner
Fall term: current concepts and objectives, agencies involved, programs on all levels—international through community. Spring term: the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. Evening.
- 281 *Group Procedures in Education** (3) Ruffner
Theory, practice, evaluation, and application to all educational levels. Evening.
- 285 *Extra-classroom Activities** (3) Root
Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contests; particular attention to sponsorship, participation, finance, and evaluation. (Not offered in 1954-55.)
- 287-88 *Clinical Study of Reading Problems** (3-3) Coleman
For advanced students. Diagnostic and corrective work under supervision in the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Education 287: material fee, \$5. Prerequisite: Education 223-24 or the equivalent. Saturday morning.
- 289-90 *Supervisory Problems in Reading** (3-3) Coleman
For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency. (Not offered in 1954-55.)
- 293-94 *Research* (3-3) The Staff
Individual research under the guidance of a member of the Staff. Program and conferences arranged with an instructor.
- 295 *Educational Research Methods and Procedures* (3) Fox
Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required. Evening. (Also offered 1954 summer term.)
Education 295x, same as 295, offered spring term. Late afternoon.

* Prerequisite: adequate professional preparation.

297 Reading in Education

To assist those preparing for the comprehensive examination. No credit toward degree requirements. Tuition fee, \$15. Late afternoon. (Also offered 1954 summer term.)

The Staff

Education 297x, same as 297, offered spring term. Late afternoon.

299-300 Thesis (3-3)

Required of all Master of Arts candidates following Plan 1. Time to be arranged. (Also offered 1954 summer term.)

The Staff

ELECTRICAL ENGINEERING

Norman Bruce Ames, M.S., E.E., LL.B., *Professor of Electrical Engineering, Executive Officer*

Forest Klaire Harris, Ph.D., *Professorial Lecturer in Electrical Engineering*

_____, *Associate Professor of Electrical Engineering*

Donald Joseph Hanrahan, B.E.E., *Assistant Professor of Electrical Engineering*

Dwight Edward Shytle, *Lecturer in Electrical Engineering*

Benjamin Franklin Slingluff, B.S. in E.E., *Lecturer in Electrical Engineering*

Harold Valdemar Oerting, B.S. in E.E., *Lecturer in Electrical Engineering*

George Pida, B.E.E., *Lecturer in Electrical Engineering*

Kermit Milton Lovewell, B.S. in E.E., *Lecturer in Electrical Engineering*

William Herbert Gossard, A.B., M.S. in E.E., *Lecturer in Electrical Engineering*

George Abraham, M.S., *Lecturer in Electrical Engineering*

William Walter Balwanz, B.E.E., M.S. in E.E., *Lecturer in Electrical Engineering*

Alvin Hanson Morgan, B.S. in E.E., *Lecturer in Electrical Engineering*

Donald Walter Lynch, M.S., *Lecturer in Electrical Engineering*

Bachelor of Electrical Engineering (School of Engineering).—See pages 127-29 and 130-31 for statement of requirements.

Master of Science in Engineering (School of Engineering).—See pages 134-35 for statement of requirements.

Electrical Engineer (School of Engineering).—See page 135 for statement of requirements.

FIRST GROUP

9-10 *Elements of Electrical Engineering (3-3)*

Ames

Electrical Engineering 9: magnetic and electric circuits, direct-current instruments and machines. Electrical Engineering 10: alternating-current circuits, instruments, and machines. Prerequisite: Physics 7. Prerequisite or concurrent registration: Mathematics 20. Morning and evening sections.

SECOND GROUP

105-6 *Direct-Current Laboratory (2-2)*

The Staff

For the student majoring in electrical engineering. A course in measurements and direct-current dynamo laboratory. Prerequisite: Electrical Engineering 9-10. Laboratory fee, \$9 a term. Laboratory (3 hours)—afternoon and evening sections.

- 107 *Alternating-Current Circuits* (3) Hanrahan
Alternating-current-circuit theory. Extensive consideration is given to harmonic analysis and to the study of harmonics in both single-phase and polyphase circuits. Prerequisite: Electrical Engineering 10. Morning and evening sections.
- 108 *Alternating-Current Machinery* (3) Ames, Lovewell
Transformers and synchronous generators. Prerequisite: Electrical Engineering 107. Morning and evening sections.
- 109 *Alternating-Current Machinery* (3) Ames, Lovewell
Synchronous motors, polyphase induction motors, single-phase motors, converters, mercury arc rectifiers. Prerequisite: Electrical Engineering 108. Morning and evening sections.
- 111-12 *Electrical Measurements* (2-2) Harris, Hanrahan
Theory of direct-current and alternating-current instruments, bridges, and meters. Prerequisite or concurrent registration: Electrical Engineering 107. Morning and evening sections.
- 115 *Advanced Network Theory I* (3) Balwanz, Morgan
Theory of resonance, linear networks, transmission lines, and filters. Prerequisite: Electrical Engineering 107. Evening.
- 116 *Advanced Network Theory II* (3) Balwanz, Morgan
Theory of transmission at UHF and VHF frequencies including Maxwell's equations, wave guides, and methods of power generation at these frequencies. Prerequisite: Electrical Engineering 115 and Physics 132. Prerequisite or concurrent registration: Physics 133. Evening.
- 123 *Advanced Network Laboratory I* (2) Gossard, Lynch
A laboratory course associated with Electrical Engineering 115. Laboratory fee, \$9. Laboratory (3 hours)—evening.
- 124 *Advanced Network Laboratory II* (2) Gossard, Lynch
A laboratory course associated with Electrical Engineering 116. Prerequisite: Electrical Engineering 123. Laboratory fee, \$9. Laboratory (3 hours)—evening.
- 129 *Symmetrical Components* (3) Slingluff
Theory and application of symmetrical components in unbalanced circuits, alternating-current machinery, and transmission lines. Prerequisite: Electrical Engineering 108. Evening.
- 130 *Principles of Electric Power Transmission* (3) Slingluff
Mechanical and electrical characteristics of transmission lines, approximate and rigorous solutions by means of hyperbolic functions, steady-state and elementary transient considerations, the more important phases of distribution of electrical energy. Prerequisite: Electrical Engineering 129. Evening.
- 133-34 *Alternating-Current Laboratory* (2-2) The Staff
A continuation of Electrical Engineering 105-6, with experiments on alternating-current circuits, instruments, and machinery. Prerequisite:

site: Electrical Engineering 106 and 108. Laboratory fee, \$9 a term. Laboratory (3 hours)—afternoon and evening sections.

- 138 *Industrial Electrical Power Applications* (2) Hanrahan
The characteristics of the various types of electrical motors and other power appliances and the principles governing their applications in industry. Prerequisite: Electrical Engineering 10. Evening.
- 139 *Illumination Engineering* (2) Oerting
Principles and practices in present-day illumination engineering. Prerequisite: Electrical Engineering 10. Evening.
- 140 *Electrical Design* (3) Hanrahan
Principles of design, with reference to materials of construction and electrical equipment. Practical exercises are assigned in connection with classroom work. Prerequisite: Electrical Engineering 109. Lecture (2 hours); laboratory (3 hours)—evening.
- 148 *Applications of Electronic Devices* (3) Balwanz
Practical applications of electronic devices such as power supplies, voltage regulators, multivibrators, electronic counters, and servo-mechanism. Prerequisite: Physics 133. Evening.
- 150 *Electronic Devices Laboratory* (2) The Staff
A laboratory course associated with Electrical Engineering 148. Laboratory fee, \$9. Evening.
- 189-90 *Proseminar in Electrical Engineering* Ames, Abraham
(1-1)
Prerequisite: Electrical Engineering 108. Evening.

THIRD GROUP

- 201 *Radio Wave Propagation* (3) Balwanz
Theory of the radiation and propagation of electromagnetic waves in space, with consideration of practical application to radio problems. 1955-56 and alternate years.
- 202 *Microwave Electronics* (3) Balwanz
Behavior of vacuum tubes at ultra-high frequencies. Theory and applications of micro-wave oscillators and transmission circuits. Measurement problems. 1955-56 and alternate years.
- 203 *Operational Analysis of Linear Systems* (3) Abraham
Analysis of circuits under steady-state and transient conditions by operational methods. Generality of the circuit concept. 1954-55 and alternate years. Evening.

206 Electronic Circuit Problems (3)

Analysis and design of low power vacuum tube and transistor circuits; amplifiers, oscillators, detectors, modulators, receivers, counters, timers; theory of measurements, non-linear analysis. 1954-55 and alternate years. Evening.

Abraham

299-300 Thesis (3-3)

Time to be arranged.

The Staff

ENGLISH

- Robert Whitney Bolwell, Ph.D., *Professor of American Literature*
 Ernest Sewall Shepard, A.M., *Professor of English Literature*
 George Winchester Stone, Jr., Ph.D., *Professor of English Literature*
 Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
 Calvin Darlington Linton, Ph.D., *Professor of English Literature*
 Charles William Cole, Ph.D., *Professor of American Literature, Executive Officer*
 William Haller, Ph.D., Litt.D., *Professorial Lecturer in English Literature*
 William Lewis Turner, Ph.D., *Associate Professor of English*
 Robert Hamilton Moore, Ph.D., *Associate Professor of English Composition*
 *Averett Howard, A.M., *Associate Professor of English Composition*
 Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*
 James Harold Coberly, Ph.D., *Associate Professor of American Literature*
 Phyllis Nichols Rowe, A.M., *Assistant Professor of English*
 John Gage Allee, Jr., A.M., *Assistant Professor of English*
 Ruth Elsie Jones, A.M., *Assistant Professor of English Composition*
 John Palmer Reesing, Jr., *Assistant Professor of English*
 Raymond Howard Reno, A.M., *Instructor in English Composition*

Bachelor of Arts with a major in American Thought and Civilization (Columbia College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62, which should include English 71-72, History 71-72, Art 71-72, and Philosophy 51-52.

Required: the general requirements stated on pages 77-82 and the grade "pass" on the American Thought and Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined is summarized under four general headings: (1) European cultural history—the Renaissance and modern social and intellectual cultures as a background to contemporary civilization with particular attention to English literature and history from the 16th through the 19th centuries; (2) American history—the political, economic, social, and religious thought and experience of the American people; (3) American philosophy and fine arts—a survey of periods and movements with a knowledge of outstanding individuals; (4) American literature—a knowledge of major writers, together with a study of poetry, fiction, and drama. The Department of English provides a proseminar (English 170-8) designed to assist the student in preparing himself for the major examination. The major adviser will give to each student at registration a check list of available courses grouped as prerequisite, necessary, or desirable for the completion of the major study program.

* On sabbatical leave fall term 1954-55.

Bachelor of Arts with a major in English Literature (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College described on page 62. It is recommended that prospective majors elect English 91-92 from among the listed offerings.

Required: the general requirements stated on pages 77-82, and the passing of the English Literature major examination at the end of the senior year. The field of coordinated knowledge upon which the student will be examined at the end of his senior year is summarized under the following general headings: (1) the history of English literature from the Anglo-Saxon period; (2) the chief English writers (a certain familiarity with each man and his main works and a detailed knowledge of Shakespeare); (3) English social and political history as it bears upon or is reflected in the literature; (4) European intellectual backgrounds and movements which have affected English literature. The proportion of work taken in each of these areas should be worked out by the student in consultation with one of the English Literature advisers. The Department of English provides a proseminar (English 199-200) to assist the student in preparing himself for the major examination. A detailed description of the major is available in the office of the Dean of Columbian College.

Master of Arts in the field of American Literary and Cultural History (Columbian College).—Prerequisite: the equivalent of an undergraduate major in this University in (1) History (with American history as a major part), (2) American Thought and Civilization, or (3) English Literature (with introductory courses in American literature and American history). The student who has not taken any of the above majors at this University must take a candidacy examination.

Required: in addition to the general requirements stated on pages 83-86, the following specific requirements must be met: twelve of the required credit hours must be of seminar study, six in American history and six in American literature; twelve of the required credit hours must be of second and third group courses in the fields of American history, literature, philosophy, education, and art recommended by the adviser; a thesis (six credit hours) in any of the foregoing fields or in some combination of them. Because of the various undergraduate majors which will be accepted for admission to this program, a basic reading list is assigned to all students, to assist in preparing them for the final Master's examination.

Master of Arts in the field of English and American Literature (Columbian College).—Prerequisite: an undergraduate major in English Literature, or American Thought and Civilization at this University; or twenty-four credit hours in English and/or American literature above the sophomore level. The student who has not taken either of the above majors at this University must take a candidacy examination. The student offering split preparation (English and American literature) will be examined in English and American literature.

Required: in addition to the general requirements stated on pages 83-86, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four credit hours, planned in consultation with the adviser; on the basis of the student's undergraduate preparation, to include a comprehensive survey of American literature and of English literature from 1600; (2) a Master's thesis (six credit hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a final written examination, on American literature and on English literature from 1600.

Master of Arts in the field of English Literature (Columbian College).—Prerequisite: an undergraduate major in English Literature at this University, or twenty-four credit hours in English literature above the sophomore level. The student who has not passed the major examination in English at this University

must take a candidacy examination which, in its scope and difficulty, is comparable to the major English examination.

Required: in addition to the general requirements stated on pages 83-86, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four credit hours, planned in consultation with the adviser; (2) a Master's thesis (six credit hours) written upon an approved topic under the direction of the instructor in whose field the material falls; and (3) a final written examination.

Doctor of Philosophy (Graduate Council).—See page 91.

Bachelor of Arts in Education with a teaching field in English (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the English option, page 155; and the professional courses listed on pages 158-59.

ENGLISH COMPOSITION

FIRST GROUP

- A English Practice (3)** The Staff
Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1. Time to be arranged. (Also offered 1954 summer term.)
- B English for Foreign Students (3)** Allee
A course in reading and writing designed to prepare the student for English 1. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. Morning and evening sections. (Also offered 1954 summer term.)
- 1 English Composition* (3)** Moore and Staff
Review of grammar, exercises in composition, readings. Morning and evening sections. (Also offered 1954 summer term.)
English 1x, same as 1, offered spring term. Morning and evening sections.
- 2 English Composition* (3)** Moore and Staff
Exercises in composition, readings. The second term of the six-hour English Composition course required of all students. Morning and evening sections. (Also offered 1954 summer term.)
English 2x, same as 2, offered fall term. Morning and evening sections.
- 11 The Writing of Reports (3)** Turner and Staff
Theory and practice in the writing of technical reports. Prerequisite: English 1, 2. Morning and evening sections. (Also offered 1954 summer term.)
English 11x, same as 11, offered spring term. Morning and evening sections.

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show meritorious ability may, upon passing further tests, be exempted from one or both terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

A pre-Columbian College students (who are required to take two years of Junior College English) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2.

English 1 is prerequisite to all other courses in English.

SECOND GROUP

- 109 *Expository Writing* (3) Howard and Staff
A study of types of expository writing with weekly exercises. Pre-
requisite: English 1, 2. Morning.
- 110 *The Short Story* (3) Howard and Staff
Some study of the technique of the short story and class criticism of
student writing. Prerequisite: English 1, 2. Morning.
- 115 *The Writing of Fiction—the Short Story* (3) Rowe
Prerequisite: English 110; consent of instructor. Evening.
- 116 *Advanced Exposition* (3) Moore
Theory and practice in the writing of expository articles and essays.
Prerequisite: English 109; consent of instructor. Evening.
- 117-18 *The Writing of Fiction—the Novel* (3-3) Howard
Writing a novel. Prerequisite: English 110; consent of instructor.
(English 117 not offered in 1954-55.) English 118, evening.

ENGLISH LITERATURE

FIRST GROUP

- 51-52 *Introduction to English Literature** Stone and Staff
(3-3)
A historical survey. Prerequisite: English 1. Morning, afternoon, and
evening sections. (Also offered 1954 summer term.)
- 91-92 *Introduction to European Literature** Shepard and Staff
(3-3)
Consideration of various types. Prerequisite: English 1. Morning and
evening sections.

SECOND GROUP*

- 121-22 *English Literature from the Beginnings to* Allee
1500 (3-3)
Fall term, English literature prior to Chaucer; spring term, Chaucer.
(English 121 not offered in 1954-55.) English 122, morning. (Also
offered 1954 summer term—English 122 (3).)
- 125 *The Evolution of Modern Speech* (3) Allee
The development of the English language in a historical treatment of
English grammar. Evening.
- 126 *The Appreciation of Literature* (3) Stone
The study of the principles of criticism and their applications to
various literary types. (Not offered in 1954-55.)

* All pre-Columbian College students (who are required to take two years of Junior College English) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2.
English 51-52, 71-73, 91-93, Classical Languages and Literatures 71-73, French 51-53, German 51-52, or Spanish 51-52 is prerequisite to all second group courses except English 125 and 126.

- 129-30x *Elizabethan Nondramatic Literature* (3-3) Tupper
Nondramatic literature from 1485 to 1601. English 130x offered fall term, evening. (English 129 not offered in 1954-55.)
- 135-36 *Shakespeare* (3-3) Tupper
Morning. (Also offered 1954 summer term—English 135 (3).)
- 139-40 *The Seventeenth Century* (3-3) Linton
First half, poetry and prose from 1603 to 1660; second half, Milton. Evening.
- 141-42 *The Neoclassical Movement* (3-3) Stone
Poetry and prose from 1660 through the mid-eighteenth century. Morning.
- 151-52 *The Romantic Movement* (3-3) Reesing
From the mid-eighteenth century through Shelley and Keats. Morning.
- 161-62 *Victorian Literature* (3-3) Shepard
Poetry and prose from 1830 to 1900. Evening.
- 165-66 *The Twentieth Century* (3-3) Linton
British poetry, prose, and drama since 1900. Afternoon.
- 181-82 *The English Novel* (3-3)
Major English novelists from Richardson to Woolf. (Not offered in 1954-55.)
- 183x-84 *The English Drama* (3-3) Tupper
The first half is concerned principally with the drama of Shakespeare's contemporaries. The second half is a historical survey from 1660 to the present day. English 183x offered spring term, evening. (English 184 not offered in 1954-55. Summer term 1954—English 184 (3).)
- 199-200 *Proseminar: Readings for the English Literature Major* (3-3) Tupper, Stone
Conferences and group discussions. Afternoon and evening sections.

THIRD GROUP

- 222 *The Age of Chaucer* (3) Stone
(Not offered in 1954-55.)
- 223-24 *Old English* (3-3) Allee
English language and literature before 1100. Fall term, Old English grammar and readings; spring term, Beowulf. Evening.
- 235-36 *Studies in Shakespeare and His Contemporaries* (3-3) Tupper
Prerequisite: English 135-36. (Not offered in 1954-55.)
- 239-40 *Studies in Milton and His Times* (3-3) Haller
First half, chief figures exclusive of Milton; second half, Milton. Evening.

- 241-42 *Studies in Neoclassical Literature* (3-3)
Prerequisite: English 141-42. (Not offered in 1954-55.) Stone
- 244 *Studies in Eighteenth Century Drama* (3)
(Not offered in 1954-55.) Stone
- 251-52 *Studies in the Romantic Movement* (3-3)
Prerequisite: English 151-52. (Not offered in 1954-55.) Shepard
- 261-62 *Studies in Victorian Literature* (3-3)
Prerequisite: English 161-62. (Not offered in 1954-55.) Linton
- 265-66 *Studies in Twentieth-Century Literature* (3-3)
Eliot and his contemporaries.
Summer term 1954—English 266 (3). Shepard
- 295-96 *Studies in the History of English Literary Criticism* (3-3)
Open to the undergraduate with the approval of the instructor. Evening. The Staff
- 299-300 *Thesis* (3-3)

AMERICAN LITERATURE

FIRST GROUP

- 71-72 *Introduction to American Literature** Bolwell and Staff
(3-3)
A historical survey. First half: from the beginnings to the Civil War. Second half: from Civil War to the present day. Prerequisite: English 1. Morning and evening sections. (Also offered 1954 summer term.)

SECOND GROUP*

- 171-72 *Studies in American Literature* (3-3) Cole
Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51-52 or 71-72. Evening.
- 173-74 *Major American Poets* (3-3) Coberly
Advanced critical study of significant writers and movements. First half: from beginnings through nineteenth century. Second half: the twentieth century. Morning.
- 175-76 *American Drama* (3-3) Bolwell
Historical and critical study of significant plays and forms. First half: from beginnings through nineteenth century. Second half: the twentieth century. Morning.

* All pre-Columbian College students (who are required to take two years of Junior College English) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 2.
English 51-52, 71-72, 91-92, Classical Languages and Literatures 71-72, French 11-12, German 51-52, or Spanish 51-52 is prerequisite to all second group courses except English 171-72.

- 177-78 *American Fiction* (3-3) Coberly
Historical and critical study of significant novels and short stories.
First half: from beginnings through nineteenth century. Second half:
the twentieth century. Evening.
- 179-80 *Proseminar: Readings for American Thought and Civilization Major* (3-3) The Staff
Conferences and group discussions. To be arranged.

THIRD GROUP

- 271-72 *Seminar: American Literature* (3-3) Bolwell
Prerequisite: English 171-72 or the equivalent. Evening.
- 277-78 *Studies in American Fiction* (3-3) Coberly
Topic: Nineteenth Century Transcendentalism. Prerequisite: English
177-78 or the equivalent. Open to the undergraduate with the ap-
proval of the instructor. Evening.
- 279-80 *Thesis* (3-3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71-72, *Greek and Roman Backgrounds in Literature*
Education 136, *Teaching English*
History 151-52, *English History*
Philosophy 111-12, *History of Philosophy*

GEOGRAPHY

Robert Dale Campbell, Ph.D., *Professor of Geography, Executive Officer*
 Louis Otto Quam, Ph.D., *Professorial Lecturer in Geography*
 Eric Fischer, Ph.D., *Professorial Lecturer in Geography*
 Meredith Frederic Burrill, Ph.D., *Professorial Lecturer in Geography*
 John Deinhart Abrahamson, M.S., *Professorial Lecturer in Geography*
 Harland Walter Westermann, A.M., *Assistant Professor of Geography*
 Sherman Raymond Abrahamson, Ph.D., *Lecturer in Geography*

Bachelor of Arts with a major in Geography (Columbia College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62. It is strongly recommended that this curriculum include: Botany 1, 2; Economics 1-2; and History 71-72. Electives must include Geography 51 and 52.

Required: in addition to the general requirements as stated on pages 77-82, twenty-four credit hours of Geography beyond first-group courses, including Geography 103-4, 113, and 114; fifteen credit hours in one or more of the following departments: Botany, Geology, Economics, History, Political Science.

Master of Arts in the field of Geography (Columbia College).—Prerequisite: the degree of Bachelor of Arts with a major in Geography from this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The thirty hours of required work must include Geography 201-2 and 299-300.

Bachelor of Arts in Education with a teaching field in Geography (School of Education).—Prerequisite: the Geography option, pages 155-56 and the professional courses listed on pages 158-59.

FIRST GROUP

- 51 *Introduction to Geography* (3) Campbell, Westermann
 A study of place attributes and characteristics; patterns and associations of physical and cultural earth features. Morning. (Also offered 1954 summer term.)
 Geography 51x, same as 51, offered spring term. Evening.
- 52 *World Regions* (3) Campbell, Westermann
 The analysis of world regional divisions; description and interpretation of physical-cultural complexes; evaluation of regional differences as they affect the distribution and activities of man. Morning. (Also offered 1954 summer term.)
 Geography 52x, same as 52, offered fall term. Evening.

SECOND GROUP

- †103-4 *Cartography* (3-3) Westermann
 Principles of cartographic drafting; elementary map projections; map and graph planning, design, and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, \$9 a term. Morning and evening sections.

- 113 **Geomorphology (3)** Quam
The nature and evolution of earth forms, with special emphasis upon relief features of North America. Prerequisite: Geography 51. Saturday morning. Field trips to be arranged.
- 114 **Weather and Climate (3)** Quam
Rudimentary atmospheric physics, air mass and frontal weather analysis, regional climatology. Prerequisite: Geography 51. Saturday morning. Laboratory to be arranged.
- 125 **Economic Geography: Trade and Transportation (3)**
The influence of geographic factors on the forms of transportation and upon trade routes and centers. 1955-56 and alternate years.
- 126 **Economic Geography: Strategic Materials (3)**
Location and utilization of raw materials essential to modern technology; position of the United States with regard to such materials. 1955-56 and alternate years.
- 127 **Economic Geography: Manufacture (3)** S. Abrahamson
Location and distribution of manufactural industries; analysis of the factors determining both; internal structures and external relationships of selected industries. 1954-55 and alternate years. Evening.
- 128 **Economic Geography: Agriculture* (3)** S. Abrahamson
Analysis of types and distribution of agricultural practices; crop ecology; character of predominantly agricultural economies. 1954-55 and alternate years. Evening.
- 131 **Conservation of Natural Resources* (3)**
Principles and problems of conservation of vital natural resources: soils, water, forests, minerals, fuels, wildlife. Prerequisite: Geography 51 and 52. 1955-56 and alternate years.
- 132 **Land Use* (3)**
Principles of geographic area analysis and land planning. Prerequisite: Geography 51 and 52. 1955-56 and alternate years.
- 141 **Geography of Settlement (3)** Westermann
The study of the nature and form of settlement, and of population trends and patterns. (Sociology 141, *Population and Migration*, is strongly recommended as an elective for students particularly interested in demography.) 1954-55 and alternate years. Morning.
- 142 **Urban Geography (3)** Westermann
The study of the location, form, and function of cities. (Sociology 126, *Urban Sociology*, is strongly recommended as an elective for students particularly interested in urban studies.) 1954-55 and alternate years. Morning.
- 151 **Economic Geography of the United States (3)** Campbell
A study of the bases of regional economic development; the character

*The following courses are strongly recommended for students particularly interested in land use, human-environmental geography, and conservation: Botany 141-42, *Plant Ecology*; 143, *Introduction to Plant Geography*; 144, *The Vegetation of North America*; and 161, *Soils*.

- of the economic structure of the United States and its relationships with other areas of the world. Morning.
- 152 *Political Geography of the United States* (3) Campbell
A study of the basis of political "regionalism" within the United States, and of our political relationships with other nations. Morning.
- †171-72 *Field Geography* (3-3) Quam
Field study methods, training in mapping and analysis techniques for both rural and urban areas. Prerequisite: Geography 51 and 52. Transportation fee: \$15 a term. Summer term 1954.
- 174 *Map Interpretation* (3)
Map elements and map uses, map reading, interpretation and evaluation of maps. Prerequisite: Geography 103-4. (Not offered in 1954-55.) Fischer
- 183 *Northwest Europe** (3) Fischer
1954-55 and alternate years. Evening.
- 184 *The Mediterranean** (3)
1954-55 and alternate years. Evening.
- 185 *Africa** (3)
(Not offered in 1954-55.)
- 191 *Middle America** (3)
1955-56 and alternate years.
- 192 *South America** (3)
1955-56 and alternate years.
- 195 *Eastern and Southeastern Asia** (3)
1955-56 and alternate years.
- 196 *Southwestern Asia and Soviet Union** (3)
1955-56 and alternate years.
- 198 *Australia and the Pacific** (3)
(Not offered in 1954-55.)

THIRD GROUP ‡

- †201-2 *Seminar: History and Philosophy of Geography* (3-3) Campbell
Evening.

* Regional survey. No prerequisite. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example, Economics 185-6, *Economic History and Problems of South America*; History 164, *South America Since Independence*; and Political Science 170, *Recent Trends in Latin American Politics and Government*.

‡ Senior major or graduate status is required in all third group courses.

- 231 *Seminar in Geography: the Dry Lands* (3) J. Abrahamson
Evening. (Also offered 1954 summer term as *International Boundary Problems*.)
- 232 *Seminar in Geography: the Polar Lands* (3) Burrill
Evening.
- 251-52 *Seminar: World Problem Areas* (3-3)
(Not offered in 1954-55.)
- 295-96 *Research* (3-3) The Staff
Special directed studies. Time to be arranged. (Also offered 1954 summer term.)
- 299-300 *Thesis* (3-3) The Staff
Time to be arranged. (Also offered 1954 summer term.)

GEOLOGY

_____, *Associate Professor of Geology*
_____, *Instructor in Geology*

Bachelor of Arts with a major in Geology (Columbia College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62.

Required: in addition to the general requirements as stated on pages 77-82, at least twenty-four of the required sixty credit hours must be in Geology beyond the first-group courses.

Master of Arts in the field of Geology (Columbia College).—Prerequisite: a Bachelor of Arts degree with a major in Geology at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86.

FIRST GROUP

5 *Field Geology* (6)

Field trips to neighboring localities of geological interest, with classroom study. (Not offered in 1954-55.)

21-22 *Physical and Historical Geology* (3-3)

Survey course covering the principles of physiography, geology, and mineralogy. (Not offered in 1954-55.)

SECOND GROUP

121-22 *Paleontology* (3-3)

Lectures and laboratory work on classification and structure of fossil invertebrates, vertebrates, and plants, including their use as guide fossils in stratigraphic geology. (Not offered in 1954-55.)

123-24 *Regional Geology of North and South America* (3-3)

Lectures and map work on the physiographic regions of the Western Hemisphere, stressing the relationship between geology and geography and culture. (Not offered in 1954-55.)

125-26 *Regional Geology of the Eastern Hemisphere* (3-3)

Alternating with Geology 123-24 and with it completing a survey of the world. (Not offered in 1954-55.)

THIRD GROUP

215-16 *Seminar* (3-3)

Detailed study and presentation by the class and instructor of some

phase of geology with review of current literature. (Not offered in 1954-55.)

227-28 *Research* (arr.)

Original work on individual problems, including a digest of the published record. (Not offered in 1954-55.)

299-300 *Thesis* (3-3)

(Not offered in 1954-55.)

GERMANIC LANGUAGES AND LITERATURES

Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
 *Wolfram Karl Legner, Ph.D., *Associate Professor of German, Executive Officer*

Bachelor of Arts with a major in Germanic Languages and Literatures (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62.

Required: in addition to the general requirements as stated on pages 77-82, German 51-52 and eighteen additional credit hours in German courses above the first group; History 39-40 or the equivalent; six credit hours in Philosophy selected with the approval of the adviser.

Master of Arts in Germanic Languages and Literatures (Columbian College).—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The thirty hours of required work must include a thesis in the field of German literature or linguistics; a reading knowledge of French.

Bachelor of Arts in Education with a teaching field in German (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the German option, page 156, and the professional courses listed on pages 158-59.

FIRST GROUP

†1-2 *First-year German (3-3)* Rogers, Legner, and Staff
 The essentials of German grammar; translation of easy prose. Morning and evening sections. (Also offered 1954 summer term.)

†3-4 *Second-year German (3-3)* Rogers, Legner, and Staff
 Selections from modern German prose; review of grammar. Prerequisite: German 1-2 or two years of high school German. Morning and evening sections. (Also offered 1954 summer term.)

49 *German Readings for Non-major Students (3)* Legner
 Designed primarily for graduate students preparing for reading examinations. Undergraduates admitted with the permission of the instructor. No academic credit for graduate students. Evening. (Also offered 1954 summer term.)

51-52 *Introduction to German Literature (3-3)* Legner, Rogers

Prerequisite: German 4 or the equivalent. Morning.

SECOND GROUP

†103-4 *Goethe's "Faust" (3-3)* Legner, Rogers
 1954-55 and alternate years. Evening.

* On sabbatical leave spring term 1954-55.

- ¹³¹⁻³² *German Literature of the Eighteenth and Nineteenth Centuries* (3-3) Rogers
The Period of Enlightenment, "Storm and Stress", classicism, romanticism, and realism. 1955-56 and alternate years.
- ¹³³ *Modern German Drama* (3) Rogers
1954-55 and alternate years. Evening.
- ¹³⁴ *Modern German Fiction* (3) Rogers
1954-55 and alternate years. Evening.

THIRD GROUP

- ^{†201-2} *Middle High German* (3-3) Legner
1955-56 and alternate years.
- ²⁹⁹⁻³⁰⁰ *Thesis* (3-3) The Staff

HISTORY

Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
 Wood Gray, Ph.D., *Professor of American History*
 Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History, Executive Officer*

*Myron Law Koenig, Ph.D., *Professor of American History*
 Roderic Hollett Davison, Ph.D., *Professor of European History*
 William Columbus Davis, Ph.D., *Associate Professor of Latin American History*

Ronald Bettes Thompson, A.B., *Assistant Professor of European History*
 Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*

Bachelor of Arts with a major in History (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62. Electives must include History 39-40 and 71-72.

Required: the general requirements as stated on pages 77-82 and the grade of "pass" on the History major examination at the end of the senior year.

The major, centered on the study of the rise, development, and spread, and the continuing challenges of Western civilization, is attested by a major examination. Under the guidance of an adviser the student will arrange his program in History to attain a balanced coverage of (1) the rise of civilization in Europe to the eve of the French Revolution, (2) the spread of Western culture throughout the world since the close of the fifteenth century, (3) the historic problems of modern industrial civilization from the beginnings of the Industrial Revolution, and (4) the relations of the major nations of Europe and America in their world setting since the Napoleonic Wars. A six-hour research seminar to give training in fundamental techniques is a required part of each major's program, and a proseminar (History 199-200) is offered as a means of integrating the student's understanding of the continuity of Western civilization. For details relating to the administration and content of the major, see the pamphlet on this subject, which is available in the offices of the Dean of Columbian College and the Executive Officer of the History Department.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62.

Required: the general requirements stated on pages 77-82, and the grade of "pass" on the Latin American Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political and social history, the economic development, the governmental structure and international relations, the principal literary works and writers, and a reasonable acquaintance with the spoken language of the Latin American republics. The Department of History provides a proseminar (History 197-98) intended to assist the student in preparing himself for the major examination. For further details, see the pamphlet, which is available in the Office of the Dean of Columbian College.

Master of Arts in the field of History (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in History from this University, or the equivalent, and the approval of the Department.

Required: the general requirements for the degree, as stated on pages 83-86. Of the twenty-four credit hours of required second- and third-group courses (exclusive of the thesis), at least six must be in third-group history courses, a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

Doctor of Philosophy (Graduate Council).—See page 91.
Bachelor of Arts in Education with a teaching field in History (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the History option, page 156, and the professional courses listed on pages 158-59.

FIRST GROUP

39-40 *The Development of European Civilization (3-3)* Kayser, Davison

Primarily for freshmen. Fall term: the political, social, economic, and cultural history of the Old World from ancient times to 1648. Spring term: from 1648 to the present. Morning and evening sections. (Also offered 1954 summer term.)

71-72 *The Development of the Civilization of the United States (3-3)* Haskett

Primarily for sophomores. Fall term: the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. Spring term: from 1865 to the present. Morning and evening sections. (Also offered 1954 summer term.)

SECOND GROUP *

109 *Thought and Culture of the Western World I: Ancient Civilization (3)* Kayser

Intellectual and social awakenings in the Near East, Greece, and Rome; classical art, letters, philosophy, and science. Morning.

110 *Thought and Culture of the Western World II: the Middle Ages and the Renaissance (3)* Kayser

Christian thought from Augustine to Thomas Aquinas; humanism and the classical revival, rise of vernacular literatures, the fine arts. Morning.

119 *Thought and Culture of the Western World III: from the Reformation through the Age of Reason (3)* Kayser

The growth of Protestant polity and doctrine; the Counter-Reformation; the scientific revival; rationalism and the Enlightenment; arts and letters. (Not offered in 1954-55.)

* History 109-40 is prerequisite to courses 109 through 162 and 101 through 166. History 71-72, 10 courses 163 through 184.

- 120 *Thought and Culture of the Western World IV: Intellectual Aspects of the Modern Age* (3) Kayser
The evolution of democratic and social concepts; liberalism and authoritarianism in religion and in politics; the impact of modern science and technology; romanticism and realism. (Not offered in 1954-55.)
- 130 *Nationalism* (3) Kayser
The historical evolution of modern nationalism. Summer term 1954.
- 145-46 *Russian History* (3-3) Thompson
Fall term: Russia and Eastern Europe, 862-1900, with emphasis on the 19th century; spring term: 20th century Russia in its liberal, revolutionary, and totalitarian phases. Morning and evening sections.
- 147 *Economic History of Europe* (3) Gray
A survey from ancient times to the present day. Morning. (Also offered 1954 summer term.)
- 148 *Overseas Expansion of Europe* (3) Merriman
International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the nineteenth and twentieth centuries. (Not offered in 1954-55.)
- 149-50 *European Diplomatic History* (3-3) Davison
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. Fall term: to 1871; spring term: since 1871. Morning.
- 151-52 *English History* (3-3) Haskett
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. Fall term: to 1689; spring term: since 1689. Morning. (Also offered 1954 summer term—History 152 (3).)
- 161 *Ancient Americans* (3) Davis
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (Not offered in 1954-55.)
- 162 *Iberian Background of Latin America* (3) Davis
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (Not offered in 1954-55.)
- 163 *Latin American History: Colonial Period* (3) Davis
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. Evening.
- 164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. Evening. (Also offered 1954 summer term.)

- 166 *Mexico and the Caribbean since Independence* (3) Davis
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Not offered in 1954-55.)
- 171-72 *Social History of the United States* (3-3) Gray
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607-1861; and the Urban-Industrial Era, 1861 to the present time. Evening.
- 173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. Evening. (Also offered 1954 summer term.)
History 173x, same as 173, offered spring term. Morning.
- 174 *Economic History of the United States* (3) Gray
Main trends in the development of American agriculture, industry, and trade since 1607, with emphasis on tendencies and problems since the Civil War. Morning.
- 175-76 *Political and Constitutional History of the United States* (3-3) Haskett
The programs and conflicts of group interests in America within the political and legal framework. Fall term: to the eve of the Civil War; spring term: the Civil War to 1940. Evening.
- 177 *The South* (3) Gray
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. Morning.
- 181-82 *Diplomatic History of the United States* (3-3) Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. Fall term: to 1871; spring term: since 1871. Morning. (Also offered 1954 summer term.)
- 183 *Oversea Expansion of the United States* (3) Merriman
The political, economic, social, and cultural life of our outlying possessions. Morning.
- 184 *Canada and the United States* (3) Merriman
The historical background and main trends in the relationship of the two English-speaking peoples of North America. Morning.
- 191-92 *Current History* (1-1) Kayser
Contemporary events in their world setting. Afternoon.
- 193 *History of the Near East* (3) Davison
The Byzantine, Arab, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. Morning.

- 195-96 *History of the Far East* (3-3) Thompson
 Fall term: the civilizations of China, India, and Japan from the beginnings to 1500 A.D. Spring term: the modern Orient under the impact of the West since 1500. Afternoon.
- 197-98 *Proseminar in Latin American Civilization* (3-3) Davis, Vázquez, Wythe
 Reading course for coordination and review. Open only to majors in Latin American Civilization. Evening.
- 199-200 *Proseminar: Reading for the History Major* (3-3) The Staff
 Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, including representative selections from the classics of historical literature. Evening. (Also offered 1954 summer term.)

THIRD GROUP *

- 241-42 *Conference Seminar in Recent European Diplomatic History*† (3-3) Davison
 (Not offered in 1954-55.)
- 244 *Reading Course in Modern European History* (3) Thompson
 Primarily for graduate students. Time to be arranged.
- 246 *Seminar in Russian and Far Eastern History* (3) Thompson
 Evening.
- 247 *Reading Course in Russian and Far Eastern History* (3) Davison
 Primarily for graduate students. Time to be arranged.
- 249 *Seminar in European Diplomatic History* (3) Davis
 Afternoon.
- 261-62 *Seminar in Latin American History* (3-3) Gray
 Evening.
- 271-72 *Seminar in the Social History of the United States* (3-3) Haskett
 Evening.
- 275 *Seminar in American Political and Constitutional History* (3) Merriman
 (Not offered in 1954-55.)
- 281-82 *Seminar in the Diplomatic History of the United States* (3-3)

* Approval of the instructor is required for registration in each third-group course.
 † Primarily for Master's candidates in the School of Government.

- 287 *Conference Seminar on the Development of the Foreign Policy of the United States** (3)
(Not offered in 1954-55.)
- 291-92 *Seminar (3-3)* The Staff
Prerequisite: approval of the Department. Time to be arranged.
(Also offered 1954 summer term.)
- 294 *Seminar in the History of the Modern Near East (3)* Davison
Evening.
- 299-300 *Thesis (3-3)* The Staff
Required of all candidates for the Master's degree specializing in history. Time to be arranged. (Also offered 1954 summer term.)

* Designed primarily for Master's candidates in the School of Government.

HOME ECONOMICS

Frances Kirkpatrick, A.M., *Professor of Home Economics, Executive Officer*

Kathryn Mildred Towne, A.M., *Associate Professor of Home Economics*

Bachelor of Science with a major in Home Economics (School of Education).—Prerequisite: Home Economics curriculum in the Junior College, see pages 64-65. The requirements for the degree are stated on pages 148 and 149.

Bachelor of Arts in Education with a teaching field in Home Economics (School of Education).—Prerequisite: the Education curriculum on page 64. For requirements, see special bulletin.

FIRST GROUP

- 1 *Food Selection and Preparation* (3) Kirkpatrick
Composition, selection, and preparation of food; analysis of recipes; standard products; planning, preparing, serving, and estimating the cost of meals. Material fee, \$15. Morning.
- 22 *Clothing: Its Selection, Cost, and Care* (3) Towne
Clothing selection—the economic, aesthetic, and hygienic aspects; the application of the principles of color and design to individual selection; the care of clothing. Evening.
- 51x *Family Meals* (3) Kirkpatrick
The choice, purchase, preparation, and service of foods; dietary standards, food habits, and the nutritional needs of the family; problems of purchasing, care, and use of food by the consumer. Material fee, \$9. Morning.
- 53 *Family Health and Household Sanitation* (3) Kirkpatrick
Home hygiene and home care of the sick; the principles of household sanitation in relation to health and diseases. Material fee, \$6. Evening.
- 62 *Clothing Construction* (3) Towne
Techniques of construction suitable for cotton, wool, and rayon fabrics; the use of commercial patterns and their alteration; the proper selection of color, design, and fabric. Material fee, \$6. Afternoon.
- 71 *Costume Design and Fashion Economics* (3) Towne
Factors determining fashions and effect on cost of clothing; problems of the consumer of textiles and clothing; historic costume and its relation to modern dress. Material fee, \$6. Morning.
- 72x *Household Textiles* (3) Towne
Properties, uses, and tests of the different textile fibres and fabrics; and development of judgment and knowledge of standard for the consumer of clothing and house-furnishing material. Material fee, \$6. Afternoon.

77 Marketing (3)

Purchasing of foods as it relates to the home and to the institution.
(Not offered in 1954-55.)

SECOND GROUP**102 Advanced Food Preparation (3)**

Kirkpatrick

The application of the fundamental processes of food preparation to a wider range of food materials and various services for different occasions. Material fee, \$15. Evening.

106 Quantity Cookery (3)

The Staff

(Not offered in 1954-55.)

123 Household Finance and Problems of the Consumer (3)

Towne

Economic problems of the family in modern industrial society; family income; income apportionment and household expenditures; laws affecting the home; investments; consumer buying. Morning.

143x Advanced Clothing Construction (3)

Towne

Problems of clothing construction, including renovation, flat pattern designing. Material fee, \$6. Morning.

148 Food Problems (3)

Kirkpatrick

Factors affecting the preparation of standard products from the experimental viewpoint; principles of food demonstrations. Material fee, \$15. (Not offered in 1954-55.)

152x Nutrition (3)

Kirkpatrick

Lecture course on the principles of normal and abnormal human nutrition. Laboratory work on the calculation and preparation of dietaries. Laboratory fee, \$6. Morning.

154 Diet Therapy (3)

Study of nutrition as applied to diet and disease. Material fee, \$6.
(Not offered in 1954-55.)

164 Child Nutrition (3)

Kirkpatrick

Basic principles in nutrition and growth of the infant, pre-school, and adolescent child in health and disease. Morning.

168 Institutional Management (3)

Study of the organization, equipment, and marketing problems of institutions. (Not offered in 1954-55.)

171 House Furnishing (3)

Towne

Home planning from the historic, artistic, economic, and sanitary viewpoints; home furnishings such as linens, dishes, floor covering, mattresses, etc. Material fee, \$3. Evening.

181 The Child in the Home (3)

Kirkpatrick

Care and development of children; parent-child relationships. (Not offered in 1954-55.)

- 192 *The Home, Its Management and Equipment* (3) Kirkpatrick
Economical management of the home; distribution of time and energy; problems in the selection, arrangement, and care of equipment. Afternoon.
- 193 *Supervision of Home Management* (3) The Staff
Field work under supervision. Designed to meet requirements of those preparing to teach in federally aided schools. Time to be arranged.
- 195-96 *Special Problems* (3-3) The Staff
Individual investigation or study under the guidance of a member of the staff. Suggested problems are: marketing, tailoring, draping, and fabric decoration. Program and conferences arranged with an instructor. Afternoon.
- 197-98 *Proseminar* (3-3) The Staff
The study of the most recent materials and problems in the various phases of home economics. Evening.

JOURNALISM

Elbridge Colby, Ph.D., *Professor of Journalism, Executive Officer*
 Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
 Joseph Marshall Mathias, A.B., LL.B., *Lecturer in Journalism*
 William Vance Nessly, *Lecturer in Journalism*
 Eugene Ingold, B.S., *Lecturer in Journalism*
 John Vincent Hinkel, M.S., *Lecturer in Journalism (Public Relations)*
 Virginia Imlay Cotten, M.S., *Lecturer in Journalism*
 Roger Brooke Farquhar, *Lecturer in Journalism*
 Stanley Babich, B.B.A., *Lecturer in Journalism*

SEMINAR LECTURERS

Richard Hollander, Managing Editor, *The Washington Daily News*
 James Russell Wiggins, Managing Editor, *The Washington Post and Times Herald*

Bachelor of Arts with a major in Journalism (Columbian College—Departmental):

In the field of News-Editorial.—Prerequisite: the Arts and Letters curriculum in the Junior College, including Journalism 71-72 and 81-82, see page 62. It is recommended that electives in the Junior College be selected from the following: Economics 1-2, English 71-72, History 71-72, Political Science 9-10, Psychology 1, Sociology 1-2, and Speech 1, 2.

Required: the general requirements as stated on pages 77-82. Of the sixty hours of required courses in Columbian College a minimum of eighteen must be in second-group Journalism courses, including 115, 137, 151, and 198. It is recommended that electives in Columbian College be selected from the following: Business Administration 147; English 171-72, 177-78; History 191-92; Psychology 151, 156; and Speech 137.

In the field of Public Relations.—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62. Electives should include Economics 1-2; English 11; History 71-72; Journalism 71-72, 81-82; Psychology 1, 2; and Speech 1, 2.

Required: the general requirements as stated on pages 77-82. The sixty hours of required courses in Columbian College must include the following: Journalism 143, 144, 145, 146, and such courses in Business Administration, English, History, Psychology and Speech, as are selected upon the advice of the Journalism Department. It is recommended that Columbian College electives be selected from the following: Business Administration, 101, 102, 105, 106, 141, 142, 147; History 174; Journalism 121, 142, 151; Psychology 144, 146, 148, 151, 156; Speech 131, 137. In exceptional cases changes from the required and recommended courses may be permitted with the approval of the Journalism Department.

FIRST GROUP

- 71-72 *Survey of American Journalism* (3-3) Colby
Journalism 71: the newspaper's position in relation to political, social, and economic life, as a public institution and as a private business, including techniques of gathering and presenting news and of leading opinion, and their effects. Journalism 72: development of newspapers from colonial days to the present and their relations to social, literary, economic, and political history. Morning and evening sections.
- 81-82 *Reporting* (3-3) Ingold, Farquhar
Techniques of newspaper reporting, instruction and practice in modern methods of gathering and presenting news. Some knowledge of typing is desirable. Prerequisite: English 1 or the equivalent. Laboratory fee, \$6 a term. Morning and evening sections.

SECOND GROUP

- 115 *Newspaper Copy Editing and Make-up* (3) Nessly
Editing of news prior to publication, the copy desk, head lines, make-up, the city editor and his functions. Prerequisite: Journalism 81-82 or the equivalent, unless taken concurrently. Saturday morning.
- 121-22 *Feature Writing* (3-3) Willson
Instruction and practice in writing of special newspaper and magazine articles for sale, material for which is obtained through interviews and independent investigation. Prerequisite: English 1, 2 or the equivalent. Journalism 121, afternoon. (Journalism 122 not offered in 1954-55.)
Journalism 121X, same as 121, offered spring term. Evening.
- 137 *Reporting of National Affairs* (3) Cotten
Training in the coverage and presentation of national news with special attention to Washington correspondence and press association reporting. Afternoon.
- 138 *Radio and Television News Reporting* (3)
Practical instruction in the collection and broadcasting of radio and television news, based on interviews (recorded for broadcasting) with Washington representatives on critical items of national and international affairs. Prerequisites: Speech 137, or Journalism 137, or the permission of the instructor. Afternoon.
- 142 *Retail Newspaper Advertising* (3) Babich
Retail newspaper advertising management, coordination of newspaper advertising with retail sales patterns, advertising readership, copy preparation, production methods. Prerequisite: Business Administration 147 or permission of the instructor. Evening.
- 143 *Industrial Journalism* (3) Willson
An introduction to the field of corporate journalism. Writing and editing the employee magazine. Preparation of annual reports. Editing stockholder publications and external house organs. The preparation of employee manuals, sales and training aids, catalogues, and bulletins. Evening.

- 144 *Business Journalism* (3) Willson
An introduction to the functions and activities of the business-paper publishing industry. Writing for the business press. Reporting the news of business and industry, finance, advertising, and marketing. Evening.
- 145 *Principles of Public Relations* (3) Hinkel
The press and information office, technique of news releases, public addresses as news, promotion of feature material, the problem of public relations in government agencies and commercial establishments. Saturday morning.
- 146 *Problems in Public Relations* (3) Hinkel
Case histories of successful public relations programs, discussion of public relations procedures and ethics, preparation of specific public relations projects. Prerequisite: Journalism 145. Saturday morning.
- 151-52 *Editorial Writing* (3-3) Colby
Current events from the standpoint of editorial interpretation, instruction and practice in the writing of editorials and columns on public affairs. Admission by permission of the instructor. It is recommended that History 191 or 192 be taken concurrently with this course. Journalism 151, evening. (Journalism 152 not offered in 1954-55.)
Journalism 151x (2), a modification of Journalism 151, offered spring term. Concurrent registration in History 192 is required. Morning.
- 198 *Law of the Press* (3) Mathias
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy. Saturday morning.

LAW

Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
 William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
 Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor of Law*
 James Forrester Davison, A.B., LL.B., LL.M., S.J.D., *Professor of Law*
 *James Oliver Murdock, Ph.B., LL.B., *Professor of Law*
 Oswald Symister Colclough, B.S., LL.B., LL.D., *Professor of Law*
 John Theodore Fey, LL.B., M.B.A., J.S.D., *Professor of Law, Executive Officer*

James Ward Morris, A.B., *Adjunct Professor of Law*
 James Robert Kirkland, A.B., LL.B., LL.M., *Adjunct Professor of Law*
 Bolitha James Laws, LL.B., LL.M., LL.D., *Adjunct Professor of Law*
 Conder Caywood Henry, A.B., LL.B., *Adjunct Professor of Law*
 John Wingfield Jackson, B.S., LL.B., *Adjunct Professor of Law*
 Frank Hammett Myers, LL.B., LL.M., *Adjunct Professor of Law*
 John Albert McIntire, A.B., LL.B., *Professorial Lecturer in Law*
 Justin Lincoln Edgerton, A.B., LL.B., *Professorial Lecturer in Law*
 Philip Field Herrick, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
 George Edward Monk, A.B., LL.B., LL.M., *Professorial Lecturer in Law*

Law

Charles Sylvanus Rhyne, LL.B., *Professorial Lecturer in Law*
 Frederick Bernays Wiener, Ph.B., LL.B., *Professorial Lecturer in Law*
 Robert McKinney Cooper, Ph.M., J.D., *Associate Professor of Law*
 Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., *Associate Professor of Law*

Law

John Patrick Burke, A.B., LL.B., *Associate Professor of Law*
 Herman Israel Orentlicher, A.B., LL.B., *Associate Professor of Law*
 David Benson Weaver, A.B., LL.B., *Associate Professor of Law*
 Louis Harkey Mayo, B.S., LL.B., J.S.D., *Associate Professor of Law*
 Glen Earl Weston, B.S., LL.B., *Associate Professor of Law*
 Joseph Patrick Driscoll, A.B., LL.B., *Associate Professor of Law*
 William Thomas Mallison, Jr., A.B., LL.B., *Assistant Professor of Law*
 Joseph Dach, LL.D., LL.B., *Lecturer in Law*
 John Joseph Czyzak, A.M., LL.B., *Lecturer in Law*
 Milton Paul Kroll, A.B., LL.B., *Lecturer in Law*
 Fraser Frost Hilder, A.B., J.D., *Lecturer in Law*
 Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Lecturer in Law*
 Charles James Zinn, A.B., LL.B., LL.M., *Lecturer in Law*
 Eugene William Geniesse, B.S.E., M.S., LL.B., *Lecturer in Law*
 William Wolcott Goodrich, LL.B., *Lecturer in Law*
 Vincent Kleinfeld, LL.B., *Lecturer in Law*

* On sabbatical leave fall term 1954-55.

John Alexander Kendrick, A.B., LL.B., *Clerk of the Trial Practice Court*

Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

For the requirements for the degrees of *Bachelor of Laws*, *Juris Doctor*, *Master of Laws*, *Master of Comparative Law*, *Master of Comparative Law (American Practice)*, and *Doctor of Juridical Science*, see pages 116-19, 120-21.

FIRST YEAR

101 *Legal Method and Legal System* (4)

Fryer, Benson, Davison, Burke, Orentlicher, Weston

Introduction to study of substantive and procedural law dealing with basic concepts. Training in method and technique of case law, based upon modern records in state and federal cases, followed by practice in the use of law books and legal writing. Importance of language in law, legal reasoning, statutory interpretation, and use of precedents, under the doctrines of *stare decisis*, law of the case, and *res judicata*. Background development of Anglo-American legal system; organization of the judiciary and the bar, stressing enforcement of ethical standards. Fryer and Benson, *Cases on Legal Method*, *Cases on Legal System*, 2 vol. ed. 1949. Morning and evening sections. (Also offered 1954 summer term.)

Law 101x, same as 101, offered spring term. Morning and evening sections.

111-12 *Contracts* (4-2)

Mayo

Scope of protection accorded contracts; specific performance of contracts other than land transactions; damages, restitution. Mutual assent: offer and acceptance, misunderstanding, mistake, reformation, parol evidence rule. Consideration, third party beneficiaries, assignments, conditions, Statute of Frauds. Morning and evening sections.

123 *Criminal Law and Procedure* (4)

Cooper

Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. Morning. (Also offered 1954 summer term.)

Law 123x, same as 123, offered spring term. Evening.

133 *Personal Property* (2)

Fryer, Mallison

Concepts of property and ownership; possession; finding; bailment; liens and pledges; acquisition of title by bona fide purchase, adverse possession, accession, confusion, judgment, satisfaction of a judgment, and gift. Morning and evening sections.

Law 133x, same as 133, offered spring term. Evening.

138 *Real Property* (4)

Benson

Historical background of the law of estates and conveyances; adverse possession; possessory estates; concurrent estates; easements, profits,

covenants, and equitable servitudes; natural rights. Morning. (Also offered 1954 summer term.)

Law 138x, same as 138, offered fall term. Evening.

142 *Torts I* (4)

Merrifield

Intended and unintended interference with the person or tangible things, defamation of the person, malicious prosecution. Morning and evening sections.

150 *Constitutional Law* (4)

Collier, Mallison

Historical introduction, judicial approach and methods, doctrine of the separation of powers, powers of the National Government; the federal system and relation of federal and state courts. Morning and evening sections.

SECOND YEAR

205 *Civil Procedure* (4)

Burke

Function and composition of pleadings, including their relation to proof. Emphasis is upon reforms, as exemplified by modern code provisions and the Federal Rules of Civil Procedure. Morning and evening sections. (Also offered 1954 summer term.)

208 *Evidence* (4)

Fryer, Weston

Functions of court and jury; witnesses; hearsay, opinion, and circumstantial evidence; proof of authenticity and contents of writings. Morning and evening sections. (Also offered 1954 summer term.)

209-10 *Conveyances and Wills* (2-2)

Land contracts, conveyances, mortgages, recording; formation and revocation of wills, testate and intestate succession. Morning and evening sections. (Also offered 1954 summer term.)

214 *Legal Accounting* (2)

Fey

A study of elementary accounting principles and techniques; application of accounting principles to legal problems. Morning and evening sections.

218 *Local Government Law* (2)

Mallison

Types and objectives of municipal, county, and special purpose local governmental units; intergovernmental relations; original organization and changes; lawmaking by local bodies; community planning and development; legal responsibility of local governmental units. Summer term 1954.

223 *Domestic Relations* (2)

Mallison

Marriage, annulment, and divorce; rights of husband and wife; rights of parent and child; infants. Morning and evening sections. (Also offered 1954 summer term.)

247 *Commercial Paper* (4)

Orentlicher

Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law. Morning and evening sections.

258 Commercial Transactions (4) Orentlicher

The law relating to the sale and distribution of goods, and to the security financing devices utilized in this connection, with particular attention to the effect of uniform laws. Morning and evening sections.

261 Agency-Partnership (4) Cooper

Master and servant (status of agent), respondeat superior, nature of agency relation; actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification. Formation of partnerships, partnership property, rights and duties of partners inter se, nature and enforcement of the partnership obligation, dissolution of the partnership, actions by and against partners. Morning and evening sections.

270 Corporations (4) Davison, Weaver

Legal requirements as to contributions of capital; powers and rights of corporations, corporate officials, and shareholders. Morning and evening sections. (Also offered 1954 summer term.)

THIRD YEAR**303 Administrative Law (4) Davison**

The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. Davison and Grundstein, Cases on Administrative Law. Evening.

Law 303x, same as 303, offered spring term. Morning.

309x Suretyship (2) Orentlicher

The law of suretyship, especially in the context of accommodation credit and commercial and financial practices, with attention also to informal and non-consensual suretyship relations and the place of suretyship principles in the solution of legal problems generally. Evening.

312 Restitution (2) Burke, Orentlicher

Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment. Morning. (Also offered 1954 summer term.)

Law 312x, same as 312, offered fall term. Evening.

315x Conflict of Laws (4)

Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations. Morning and evening sections. (Also offered 1954 summer term.)

317 Creditors' Rights (4)

Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration. (Not offered in 1954-55.)

- 321-22 *Current Decisions* (2-2) Davison, Weston
Required of, and limited to, members of the student staff of the Law Review. Time to be arranged.
- 324 *Federal Jurisdiction* (2) Cooper
Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts. McCormick and Chadbourn, Cases on Federal Courts. Morning.
Law 324x, same as 324, offered fall term. Evening.
- 326 *Insurance* (2) Evening.
The insurance device in life, property, and other risks. Murdock
- 327x *International Law* (4) Murdock
Origin, nature, sources, and authority; the international community, recognition, organization (the United Nations); nationality, territory, jurisdiction; treaties; diplomatic and consular agents; state responsibility and international claims; pacific settlement of disputes. Morning and evening sections.
- 329 *Labor Law* (4) Merrifield
Laws applicable to strikes, picketing, boycotts, etc.; organization and representation of employees; negotiation of collective bargaining contracts; inter-union and intra-union relations; settlement of wage disputes (arbitration, mediation, conciliation). Cases, legislative and administrative materials, readings. Morning and evening sections.
- 331 *Labor Law Practice* (2) Merrifield
The role of the lawyer in the negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration and under federal labor legislation, such as the Labor Management Relations Act and the Fair Labor Standards Act.
Summer Term 1954.
- 333 *Legislation* (4) Mallison
The legislative process, with particular emphasis on its operation in the federal and state governments; legislative organization and procedure; kinds of statutes; statutory interpretation. Morning.
- 335-36 *Trial Practice* Laws, Morris, Kirkland, Edgerton,
Court (2-2) Myers, Jackson, Herrick, Monk,
Kendrick, Skinner
Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.
To be taken in the senior year. Prerequisite: Law 205 and 208.
Morning and evening sections.
- 337 *Future Interests* (2) Benson
Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities. Morning. (Also offered 1954 summer term.)
Law 337x, same as 337, offered spring term. Evening.

- 340x Constitutional Interpretations (4)** Collier
Advanced course in constitutional law. The Constitution and constitutional tradition; doctrines of limited government, separation of powers, implied limitations on legislative power, and significance of "due process" in current constitutional developments. Introduction to comparative constitutional law, with studies in the constitutional law of selected states of the Union. Evening.
- 345 Substantive Patent Law* (2)** Harris
Substantive patent law; patentability; revision, use, and enforcement of patents. Evening.
- 346 Patent Office Practice* (2)** Henry
Rules of practice; appeal and interference procedure. Evening.
- 349-50 Patent Trial Practice Court* (2-2)** Henry, Geniesse
Practice before the United States Court of Customs and Patent Appeals, the District Court of the United States for the District of Columbia, and the Court of Appeals for the District of Columbia involving suits under Section 4915 of the Revised Statutes; practice before the United States courts in infringement. Evening.
This course may be elected instead of Law 335-36 to satisfy the Trial Practice Court requirement. Both courses may not be counted toward a degree.
- 351x Public Utilities (2)** Fryer
Regulation by governmental agencies concerned with power fields, dealing principally with services required and determination of rate of return based on "net investment" doctrine. Study of techniques employed in original proceedings and nature of judicial review. Examination of policies underlying national controls over distribution of electricity and natural gas. Evening.
- 365 Government Contracts I (2)** McIntire
A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of Government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims. Evening.
- 366 Government Contracts II (2)** McIntire
Special problems in Government contracts, including adjustments and relief; stand-by contracts for mobilization of industrial resources; special relief provisions; efforts toward unified procurement activity; procedure for prosecuting claims under Government contracts; attempts at price, cost, or profit control; termination. Evening.
- 369 Jurisprudence (4)** Collier
History of jurisprudence; schools of jurists, particularly the nineteenth century schools; sociological jurisprudence; theories of justice;

* Parent law students should take Law 345 and Law 349 concurrently in the fall term and Law 346 and Law 350 concurrently in the spring term. Law 349-50 may be taken only by students who are taking or have taken Law 345.

the nature of law; law and morals; law and the state; the scope and subject matter of law, sources and forms of law; the traditional element; analysis of general legal concepts. Evening.

- 373x *Taxation* (2) Collier
Introductory course on basic concepts of federal tax system. Attention given to state inheritance and income taxes. Problems of jurisdiction to tax, construction of tax statutes, methods of judicial review of administrative actions in the tax field, modern excise taxes on business concerns. Magill and Maguire, *Cases on Taxation*, 4th ed. Evening.
- 374x *Taxation—Federal Estate and Gift* (2) Driscoll
Specific problems in federal estate and gift taxation, with consideration of relevant state inheritance tax problems. Evening.
- 375-76 *Taxation—Federal Income* (2-2) Fey, Driscoll
A study of the federal income tax, including construction of statutes, practice and procedure, and legislative policy in the development of the income tax structure. Morning and evening sections. (Also offered 1954 summer term.)
- 377 *Torts II—Unfair Trade Practices* (4) Weston
Unfair trade practices at common law and under state and federal statutes. Trade-marks and trade names, including Trade-Mark Act of 1946. Misappropriation. False advertising at common law. Federal Trade Commission jurisdiction over misrepresentation practices. Lotteries and premiums. Disparagement of competitor's goods and business methods. State Fair Trade Acts (resale price maintenance). Price discrimination (State and Federal Robinson-Patman Act). State statutes prohibiting sales below cost. Inducing breach of contract. Commercial bribery. Miscellaneous business Torts constituting unfair interferences with advantageous business relations. Oppenheim. *Unfair Trade Practices, Cases, Comments and Materials* (1950). Morning and evening sections.
- 378 *Federal Anti-Trust Laws* (4) Hilder
Restraints of trade at common law. Public policy under Sherman Anti-Trust Act of 1890 and Federal Trade Commission and Clayton Acts, including mergers, consolidations, and monopoly. Loose association activities (price-fixing agreements, trade associations, international cartels). Specific practices such as resale price maintenance, delivered price systems, exclusive arrangements and tying devices, trade boycotts. Patents and copyrights under anti-trust laws. Remedies. Oppenheim, *Cases on Federal Anti-Trust Laws*. Evening.
- 381 *Trusts* (4) Weaver
Creation, elements, administration, enforcement, termination. Liabilities to and of third persons. Resulting and constructive trusts. Bogert. *Cases on Trusts*, 2d ed. Morning and evening sections. (Also offered 1954 summer term.)
- 383 *Military Law and Jurisdiction* (2) Wiener
Sources of military jurisdiction; military law proper, including court-martial jurisdiction and procedures before, during, and after trial.

military government; martial law; laws of war and treatment of offenders. Evening.

- 386 *Aviation Law* (2) Rhyme
 Procedure before Civil Aeronautics Board; legal problems arising in connection with air transportation and airports, international conventions and organizations. Evening.

- 388 *Admiralty* (2) Colclough
 Federal and state jurisdiction; jurisdiction over waters, craft, contracts, torts, crimes, in equitable matters, etc.; laws applicable to maritime workers and maritime liens. Sprague and Healy, Cases on Admiralty. Evening.

- 391 *Regulation of Communication Media* (2) Mayo
 An examination of the legal doctrine relating to regulatory practices in the channels of mass communications, i.e., newspapers, motion pictures, and radio-television; analysis of the operational structure of the mass media and the pattern of control exercised by government, private associations, and various community groups; appraisal of the comparative utility of various regulatory techniques for implementing policies affecting these media; special emphasis will be placed on the functions of the Federal Communications Commission. Evening.

GRADUATE COURSES

- 403x *Administrative Law Seminar* (2) Davison
 Group study of specific problems in administrative law. Evening.

- 405x *Legal Problems in Modern Methods of Warfare* (2) Mallison
 The contemporary international law of war: the legal aspects of modern methods of exercising coercion (economic, political, psychological, and military); the conduct and regulation of hostilities; the special problems of atomic, bacteriological, and chemical weapons; war crimes. Evening.

- 408 *Regulation of Securities and Securities Markets* (2) Kroll

A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission. Evening.

- 410x *Modern Social Legislation* (2) Merrifield
 Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age. Evening.

412 *Recent Legal Developments in International Relations* (2)

Czyzak

A study of selected current problems, including the most significant provisions of international trade agreements, particularly the General Agreement on Tariffs and Trade; a review of international commodity problems; and an examination of the legal doctrine relating to the Coal and Steel Community (Schuman Plan). (Not offered in 1954-55.)

414 *Control and Use of Atomic Energy* (2)

Mayo

Various legal problems involved in the control and use of atomic energy will be examined including the Atomic Energy Act, the policy underlying the present government monopoly, the security problem of safeguarding atomic military information, the implications in prospective industrial control and use, and legal means of protecting personal interests against the possible consequences of atomic warfare. Evening.

415 *Comparative Law* (4)

Murdock

Historical and comparative study of the fundamental principles of the Roman and modern Civil Law (law of South and Central America and most of continental Europe); comparative study of selected legal institutions to exemplify significant differences between the civil and common law systems in source materials and in methods and approaches to the solution of legal problems. Evening.

417 *Legislative Drafting* (2)

Zinn

Advanced instruction and practice in legislative drafting. Evening.

421 *Constitutional Law Seminar* (2)

Collier

Group study of contemporary problems in constitutional law. (Not offered in 1954-55.)

423x *Criminal Practice and Administration* (2)

Cooper

Group study of the fundamental aspects of criminal procedure with special reference to practice before the District of Columbia and federal courts: the law of arrest, searches and seizures, self-incrimination, the function of the preliminary examination and grand jury, sufficiency of indictments, trial procedure, and the order of pleas and motions. Time to be arranged.

427 *World Law* (2)

Czyzak

The United Nations as a basis of reference for a study of international law. Evening.

430x *International Law Seminar* (2)

Murdock

Group study of contemporary problems in international law. Evening.

432 *Comparative Law Seminar* (2)

Evening.

Group study of contemporary problems in comparative law. Dach

437 *Monetary Law* (2)

Introductory survey of the provisions of public law by which money is administered, relating particularly to the Federal Reserve System; the legal character of money and of monetary obligations; legal tender; the "dollar-for-dollar" rule and its limitations; protective clauses (gold, commodity, and index clauses). Particular emphasis will be given to

the law relating to foreign money: money of contract; money of payment; conversion; rate of exchange; conflict of laws problems. Evening.

- 451x *Trade Regulation Seminar (2)* **Weston**
Group study of current problems relating to unfair trade practices and federal anti-trust laws. Evening.
- 461 *Corporate Taxation Seminar (2)* **Driscoll**
Group study of special problems in corporate taxation. Evening.
- 462 *Federal Taxation Seminar (2)* **Driscoll**
Group study of special problems in federal taxation. Evening.
- 466 *Estate Planning Seminar (2)* **Weaver**
Consideration of the problems involved in planning an effective and economical gift distribution of property interests. Typical estates, both large and small, will be considered in the light of the results commonly sought by the donor and the techniques and restrictions suggested by the law of property, wills, future interests, insurance, and federal and state taxation. Evening.
- 468 *Labor Law Seminar (2)* **Merrifield**
Group study of contemporary problems in labor law. Evening.
- 470 *Food and Drug Law (2)* **Goodrich, Kleinfeld**
A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered. Evening.
- 471 *Research in Public Law (2)* **The Staff**
Research in public law under supervision of a member of the Faculty. Time to be arranged.
Law 471x, same as 471, offered spring term. Time to be arranged

MATHEMATICS

*James Henry Taylor, Ph.D., *Professor of Mathematics, Executive Officer*

Francis Edgar Johnston, Ph.D., *Professor of Mathematics*

Florence Marie Mears, Ph.D., *Professor of Mathematics*

Nels David Nelson, Ph.D., *Associate Professor of Mathematics*

Earl Larkin Williams, A.M., *Lecturer in Mathematics*

Louis William Tordella, Ph.D., *Lecturer in Mathematics*

Bachelor of Arts or Bachelor of Science with a major in Mathematics (Columbian College—Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 62-63.

Required: in addition to the general requirements as stated on pages 77-82, fifteen credit hours of Mathematics of approved second- and third-group courses.

Master of Arts or Master of Science in the field of Mathematics (Columbian College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematics at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86.

Doctor of Philosophy (Graduate Council).—See page 91.

Bachelor of Science in Engineering with an option in Mathematics (School of Engineering).—For requirements, see page 133.

Bachelor of Arts in Education with a teaching field in Mathematics (School of Education).—Prerequisite: the Education curriculum in the Junior College, page 64.

Required: the Mathematics option, pages 156-57, and the professional course listed on pages 158-59.

FIRST GROUP†

3 *College Algebra* (3)

Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. Morning and evening sections. (Also offered 1954 summer term.)

Mathematics 3x, same as 3, offered spring term. Morning and evening sections.

6 *Plane Trigonometry* (3)

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). Morning and evening sections. (Also offered 1954 summer term.)

Mathematics 6x, same as 6, offered fall term. Morning and evening sections.

12 *Analytic Geometry* (3)

Prerequisite: Mathematics 3 and 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school

* On sabbatical leave spring term 1954-1955.

† No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

trigonometry. Morning and evening sections. (Also offered 1954 summer term.)

Mathematics 12x, same as 12, offered fall term. Morning and evening sections.

- 19 *Differential Calculus* (3) The Staff
Prerequisite: Mathematics 12. Morning and evening sections. (Also offered 1954 summer term.)

Mathematics 19x, same as 19, offered spring term. Morning and evening sections.

- 20 *Integral Calculus** (3) The Staff
Prerequisite: Mathematics 19. Morning and evening sections. (Also offered 1954 summer term.)

Mathematics 20x, same as 20, offered fall term. Morning and evening sections.

SECOND GROUP *

- 102 *Fundamental Concepts of Mathematics* (3)
(Not offered in 1954-55.)

- 103 *Calculus and Differential Equations* (3) The Staff
Morning and evening sections.
Mathematics 103x, same as 103, offered spring term. Morning and evening sections.

- 112 *Mathematics for Engineers and Scientists* (3) The Staff
Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 132 or 103. Evening.

- 123 *Theory of Equations* (3) Johnston
Summer term 1954.

- 125x *Advanced Algebra* (3) Tordella
Evening.

- 126 *Advanced Analytic Geometry* (3)
(Not offered in 1954-55.)

- 132x *Differential Equations* (3) Johnston
Evening.

- 134 *Introduction to Boundary Value Problems* (3)
Prerequisite: Mathematics 103 or 132. (Not offered in 1954-55.)

- †135-36 *Projective Geometry* (2-2)
(Not offered in 1954-55.)

- 139 *Advanced Calculus* (3) Mears
Morning.

- Mathematics 139x, same as 139, offered spring term. Evening.

- 140 *Introduction to Analysis* (3) Mears
Prerequisite: Mathematics 139. Morning.

* Mathematics 20 is prerequisite to all second-group courses.

141 *Introduction to Infinite Series* (3)
Evening.

Mears

167 *Fourier Series and Spherical Harmonics* (3)
Prerequisite: Mathematics 132. (Not offered in 1954-55.)

Taylor

171 *Vector Analysis* (3)
Evening.

THIRD GROUP

202 *Mathematical Logic* (3)
(Not offered in 1954-55.)

220 *Theory of Numbers* (3)
(Not offered in 1954-55.)

†237-38 *Theory of Functions* (3-3)
(Not offered in 1954-55.)

Mears

242 *Infinite Series* (3)
Evening.

249 *Ordinary Differential Equations* (3)
(Not offered in 1954-55.)

250 *Integral Equations* (3)
(Not offered in 1954-55.)

Nelson

†251-52 *Theory of Functions of a Real Variable* (3-3)
Evening.

Taylor

255 *Differential Geometry* (3)
Evening.

257 *Theory of Groups* (3)
(Not offered in 1954-55.)

Johnston

265-66 *Modern Algebra* (3-3)
Evening.

268 *Calculus of Variations* (3)
(Not offered in 1954-55.)

270 *Tensor Analysis* (3)
(Not offered in 1954-55.)

277 *Partial Differential Equations* (3)
(Not offered in 1954-55.)

278 *Introduction to Topology* (3)
(Not offered in 1954-55.)

The Staff

295-96 *Reading and Research* (3-3)
Time to be arranged.

The Staff

299-300 *Thesis* (3-3)

MECHANICAL ENGINEERING

Benjamin Carpenter Cruickshanks, B.S. in M.E., *Professor of Mechanical Engineering, Executive Officer*

Victor Szebehely, Dr. Eng., *Professorial Lecturer in Mechanical Engineering*

Robert Gay Trumbull, B.S. in C.E., *Associate Professor of Mechanical Engineering*

Charles Edward Greeley, B.S. in M.E., *Associate Professor of Mechanical Engineering*

John Kaye, M.S. in M.E., *Associate Professor of Mechanical Engineering*

Edward French Davis, M.S., *Associate in Mechanical Engineering*

Bachelor of Mechanical Engineering (School of Engineering).—See pages 127-29 and 131 for statement of requirements.

Master of Science in Engineering (School of Engineering).—See pages 134-35 for statement of requirements.

Mechanical Engineer (School of Engineering).—See page 135 for statement of requirements.

FIRST GROUP

1 **Engineering Survey and Orientation (1)** Cruickshanks and Staff

Open to freshmen only. Morning and evening sections.

3 **Mechanical Drawing (2)** Trumbull, Greeley, Davis
Drafting-room fee, \$5. Drafting (6 hours)—afternoon and evening sections.

4 **Descriptive Geometry (2)** Trumbull, Greeley, Davis
Drafting-room fee, \$5. Drafting (6 hours)—afternoon and evening sections.

7 **Machine Drawing (2)** Trumbull
Prerequisite: Mechanical Engineering 3 and 4. Drafting-room fee, \$5. Drafting (6 hours). 1954-55 and alternate years, evening; 1955-56 and alternate years, afternoon.

8 **Mechanism Drawing (2)** Trumbull
Prerequisite: Mechanical Engineering 3, 4, and 13. Prerequisite or concurrent registration: Mechanical Engineering 14. Drafting-room fee, \$5. Drafting (6 hours). 1954-55 and alternate years, evening; 1955-56 and alternate years, afternoon.

13-14 **Mechanism (2-2)** Trumbull
Prerequisite: Mathematics 19. Prerequisite or concurrent registration: Mathematics 20. Morning and evening sections.

SECOND GROUP

- 111-12 Thermodynamics (3-3)** Cruickshanks
With introductory study of laws of heat transmission. Prerequisite: junior status. Morning and evening sections.
- 115-16 Mechanical Laboratory (2-2)** Greeley
Calibration of instruments; calorimetry; testing of prime movers, auxiliaries, combustion engines, and refrigerating machines. Eight-hour power-plant test required. Mechanical Engineering 115 prerequisite: Mechanical Engineering 112, Electrical Engineering 10. Prerequisite or concurrent registration: Mechanical Engineering 133, 139; Mechanical Engineering 116 prerequisite: Mechanical Engineering 115; prerequisite or concurrent registration: Mechanical Engineering 132, 140. Laboratory fee, \$9 a term. Laboratory (6 hours), 1954-55 and alternate years, evening; 1955-56 and alternate years, afternoon.
- 126 Methods of Manufacture (2)** Greeley
Foundry practices, forging, welding, machine tools, inspection, factory processes. Inspection trips required. Prerequisite: Mechanical Engineering 8 and 14; Civil Engineering 26. 1954-55 and alternate years, evening; 1955-56 and alternate years, morning.
- 127-28 Machine Design (2-2)** Kaye
With stress-analysis computation and design periods (6 hours). Prerequisite: Mechanical Engineering 7, 8, and 112; Civil Engineering 26, 136, and 140. Drafting-room fee, \$3 a term. 1954-55 and alternate years, afternoon; 1955-56 and alternate years, evening.
- 129-30 Power Plants (3-3)** Cruickshanks
Study of design, layout, installation, and operation of power plants and equipment, with emphasis on heat transmission and instrumentation. Prerequisite: Mechanical Engineering 112. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.
- 131-32 Heating, Ventilating, Air Conditioning, and Refrigeration (2-2)** Greeley
Principles and applications. Prerequisite: Mechanical Engineering 112; Civil Engineering 26 and 136. 1954-55 and alternate years, evening; 1955-56 and alternate years, afternoon.
- 133 Combustion Engines (2)** Greeley
Study of spark-ignition and compression-ignition engines, combustion, performance, fuels, knock, supercharging and combustion charts. Inspection trips required. Prerequisite: Mechanical Engineering 112; senior status. 1954-55 and alternate years, evening; 1955-56 and alternate years, morning.
- 139 Fluid Dynamics (3)** Mason
Theory and application of fluid mechanics. Prerequisite: Mechanical Engineering 112; Civil Engineering 140. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.
- 140 Dynamics of Machinery (3)** Szebehely
Inertia effects, balancing, vibration phenomena. Prerequisite: Mechanical Engineering 7, 8, and 14; Civil Engineering 140. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.

- 141-42 *Management Problems* (2-2) Kaye
 Organization of an industrial enterprise; the handling and training of men. Prerequisite: Economics 1-2. 1954-55 and alternate years, morning; 1955-56 and alternate years, evening.
- 189-90 *Proseminar in Mechanical Engineering* Cruickshanks
 (1-1)
 Prerequisite: Speech 1; senior status. Late afternoon.

THIRD GROUP

- 201 *Instrumentation* (3)
 Theory of measurement and instrumentation systems. Physical principles involved in research and commercial instrumentation. Design problems. 1954-55 and alternate years. Evening.
- 202 *Advanced Dynamics of Machinery* (3) Szebehely
 Free, damped, and forced vibrations of mechanical systems; the dynamic response of elastic systems. Selected topics in vibration isolation and control. 1955-56 and alternate years.
- 203 *Advanced Fluid Dynamics* (3) Mason
 Advanced mechanics of real and ideal fluids, potential theory, turbulence, boundary layer mechanics, hydrodynamic lubrication. 1955-56 and alternate years.
- 204 *Heat Transfer Thermodynamics* (3)
 Advanced problems in compression of gases and liquids; combustion. Heat transfer problems involving radiation, convection, conduction, evaporation, and condensation. 1954-55 and alternate years. Evening.
- †217-18 *Seminar in Engineering* (1-1) Mason
 Time to be arranged.
- 299-300 *Thesis* (3-3) The Staff

MEDICINE

- Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor of Medicine*
 Thomas McPherson Brown, A.B., M.D., *Professor of Medicine, Executive Officer*
 Charles Robert Lee Halley, A.B., M.D., *Clinical Professor of Medicine*
 Clayton Bernard Ethridge, M.D., *Clinical Professor of Medicine*
 Louis Katz Alpert, B.S., M.D., *Clinical Professor of Medicine*
 Sol Katz, B.S., M.D., *Adjunct Clinical Professor of Medicine*
 Joseph Francis Fazekas, B.S., M.D., *Adjunct Clinical Professor of Medicine*
 Harry Eagle, A.B., M.D., *Professorial Lecturer in Medicine*
 Robert William Berliner, B.S., M.D., *Professorial Lecturer in Medicine*
 Henry Field, Jr., M.D., *Professorial Lecturer in Medicine*
 John Coleman Nunamaker, M.S., M.D., *Professorial Lecturer in Medicine*
 Monroe James Romansky, A.B., M.D., *Associate Professor of Medicine*
 Peter Diacoumis Comanduras, B.S., M.D., M.S. in Med., *Associate Clinical Professor of Medicine*
 John McCallum Evans, A.B., M.D., *Associate Clinical Professor of Medicine*
 Clarence Richard Hartman, A.B., M.D., *Associate Clinical Professor of Medicine*
 Walter Kendall Myers, B.S., M.D., *Assistant Clinical Professor of Medicine*
 John Alton Reed, A.B., M.D., *Assistant Clinical Professor of Medicine*
 Theodore Judson Abernethy, B.S., M.D., *Assistant Clinical Professor of Medicine*
 William Travis Gibb, Jr., A.B., M.D., *Assistant Clinical Professor of Medicine*
 Roy Hertz, Ph.D., M.D., *Assistant Clinical Professor of Medicine*
 Alfred Henry Lawton, M.D., Ph.D., *Assistant Clinical Professor of Medicine*
 Samuel Ross Taggart, M.D., *Assistant Clinical Professor of Medicine*
 Benjamin Manchester, M.D., *Assistant Clinical Professor of Medicine*
 Pearl Holly, M.S., M.D., *Assistant Clinical Professor of Medicine*
 James Joseph Feffer, A.B., M.D., *Assistant Clinical Professor of Medicine*
 John Watkins Trenis, A.B., M.D., *Assistant Clinical Professor of Medicine*
 Albert David Kistin, A.M., M.D., *Assistant Clinical Professor of Medicine*

- Andrew Gabriel Prandoni, B.S., M.D., *Assistant Clinical Professor of Medicine*
- Ruth Hechler Wichelhausen, M.D., *Assistant Clinical Professor of Medicine*
- Ludwig George Lederer, M.D., Ph.D., *Assistant Clinical Professor (Research) of Medicine*
- John Eldrid Smith, A.B., M.D., *Assistant Clinical Professor (Research) of Medicine*
- Maurice Protas, A.B., M.D., *Associate in Medicine*
- John Minor, A.B., M.D., *Associate in Medicine*
- Lawrence Jay Thomas, B.S., M.D., *Associate in Medicine*
- Lawrence Elias Putnam, A.B., M.D., *Associate in Medicine*
- Bernard Lauriston Hardin, Jr., A.B., M.D., *Associate in Medicine*
- Charles William Ordman, A.B., M.D., *Associate in Medicine*
- Benjamin Calloway Jones, Jr., A.B., M.D., *Associate in Medicine*
- Richard Bernard Castell, A.B., M.D., *Associate in Medicine*
- Myer Harold Stolar, B.S., M.D., *Associate in Medicine*
- Sam Thompson Gibson, B.S., M.D., *Associate in Medicine*
- Walter Lewis Nalla, B.S., M.D., *Associate in Medicine*
- Alfred Brigulio, M.D., *Associate in Medicine*
- Halla Brown, M.D., *Associate in Medicine*
- Ralph Bretney Miller, A.B., M.D., *Associate in Medicine*
- Thomas Stone Sappington, A.B., M.D., *Associate in Medicine*
- Ernest Cotlove, B.S., M.D., *Associate (Research) in Medicine*
- Thomas James Kennedy, Jr., B.S., M.D., *Associate (Research) in Medicine*
- Jack Orloff, M.D., *Associate (Research) in Medicine*
- John Christian Ransmeier, A.B., M.D., *Associate in Medicine*
- Monte Arnold Greer, A.B., M.D., *Associate in Medicine*
- Samuel Jacob Nathan Sugar, Phar.G., M.D., *Associate in Medicine*
- Joseph Ney, B.S., M.D., *Associate in Medicine*
- Joseph Beinstein, A.B., M.D., *Associate in Medicine*
- Frank Solomon Bacon, B.S., M.D., *Associate in Medicine*
- Leonard Davis Fenninger, A.B., M.D., *Associate (Research) in Medicine*
- Henry Dunlop Ecker, B.S., M.D., *Associate in Medicine*
- Jack Jacob Rheingold, A.B., M.D., *Associate in Medicine*
- Irene Gorski Tamagna, M.D., *Associate in Medicine*
- Adrian Michael Hogben, M.D., Ph.D., *Associate (Research) in Medicine*
- Elizabeth Harman Hill, M.D., *Associate in Medicine*
- John Bayne Marbury, M.D., *Associate in Medicine*
- Louis Ross, M.D., *Associate in Medicine*
- Frederic Dunbar Chapman, A.B., M.D., C.M., *Associate in Medicine*
- John Wilmer Latimer, Jr., M.D., *Associate in Medicine*

- Luther Henry Snyder, A.B., M.D., *Associate in Medicine*
 Charles Wilson Jones, A.B., M.D., *Associate in Medicine*
 Thomas Joseph Pekin, B.S., M.D., *Associate in Medicine*
 Robert George Taylor, M.D., *Associate in Medicine*
 Charles Waters Thompson, M.D., *Associate in Medicine*
 James Walling Long, M.D., *Associate in Medicine*
 Eugene Solomen Gladsden, B.S., M.D., *Associate in Medicine*
 Maurice Mensh, M.D., *Associate in Medicine*
 Arthur Rosenbaum, B.S., M.D., *Associate in Medicine*
 James Irving Boyd, M.D., M.S., *Lecturer in Medicine*
 James Theodore Burns, M.D., *Clinical Instructor in Medicine*
 Irvin Kerlan, B.S., M.D., C.P.H., *Clinical Instructor in Medicine*
 Virginia Patterson Beelar, A.B., M.D., *Clinical Instructor in Medicine*
 Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Clinical Instructor in Medicine*
 Charles Edward Law, M.D., *Clinical Instructor in Medicine*
 Emil Herbert Bauersfeld, A.B., M.D., *Clinical Instructor in Medicine*
 Stanley William Kirstein, B.S., M.D., *Clinical Instructor in Medicine*
 James Francis Ambury, B.S., M.D., *Clinical Instructor in Medicine*
 William Otis Bailey, Jr., M.D., *Clinical Instructor in Medicine*
 Harry Clark Bates, B.S., M.D., *Clinical Instructor in Medicine*
 Robert Norwood Coale, B.S., M.D., *Clinical Instructor in Medicine*
 Israel Kessler, M.S., M.D., *Clinical Instructor in Medicine*
 Francis James Murray, B.S., M.D., *Clinical Instructor in Medicine*
 Edwin Pearson Parker III, B.S., M.D., *Clinical Instructor in Medicine*
 Morris Hirsh Rosenberg, A.B., M.D., *Clinical Instructor in Medicine*
 Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*
 John William Du Chez, M.D., *Clinical Instructor in Medicine*
 Thomas Lees Hartman, A.M., M.D., *Clinical Instructor in Medicine*
 Boris Rabkin, A.B., M.D., *Clinical Instructor in Medicine*
 Morton Harold Rose, M.D., *Clinical Instructor in Medicine*
 George Sharpe, A.B., M.D., *Clinical Instructor in Medicine*
 Marvin Fuchs, B.S., M.D., *Clinical Instructor in Medicine*
 Frank Goodnow MacMurray, A.B., M.D., *Clinical Instructor in Medicine*
 William Jack Weaver, Jr., A.B., M.D., *Clinical Instructor in Medicine*
 Ruth Boschwitz Benedict, A.B., M.D., *Clinical Instructor in Medicine*
 Cyril Augustus Schulman, B.S., M.D., *Clinical Instructor in Medicine*
 Louis Aleck Craig, Jr., A.B., M.D., *Clinical Instructor in Medicine*
 Abraham Wolfe Danish, A.B., M.D., *Clinical Instructor in Medicine*
 Milton Gusack, A.B., M.D., *Clinical Instructor in Medicine*
 William Lewis, M.D., *Clinical Instructor in Medicine*
 Alvin Seltzer, B.S., M.D., *Clinical Instructor in Medicine*
 Adolph Friedman, A.B., M.D., *Clinical Instructor in Medicine*

- Samuel Dennis Loube, A.B., M.D., *Clinical Instructor in Medicine*
 Alvin Edward Parrish, M.D., *Clinical Instructor in Medicine*
 Nahum Raphael Shulman, M.D., *Clinical Instructor in Medicine*
 Stewart William Bush, B.S., M.D., *Clinical Instructor in Medicine*
 Alfred Baer, A.B. M.D., *Clinical Instructor in Medicine*
 Jack Kleh, A.B., M.D., *Clinical Instructor in Medicine*
 James William Hollingsworth, M.D., *Clinical Instructor in Medicine*
 Edward Luke Rea, A.B., M.D., *Clinical Instructor in Medicine*
 William Robert Felts, Jr., B.S., M.D., *Clinical Instructor in Medicine*
 Stanley Green, A.B., M.D., *Clinical Instructor in Medicine*
 James Packard Mann, M.D., *Clinical Instructor in Medicine*
 Stuart McGuire Sessoms, B.S., M.D., *Clinical Instructor in Medicine*
 Maurice Arthur Sislen, A.B., M.D., *Clinical Instructor in Medicine*
 William Holmes Crosby, Jr., A.B., M.D., *Clinical Instructor in Medicine*
 Joseph Hicks Watson, B.S., M.D., *Clinical Instructor in Medicine*
 Conrad Gossels, M.D., *Clinical Instructor in Medicine*
 Charles Joseph Savarese, Jr., A.B., M.D., *Clinical Instructor in Medicine*
 James Eliot Chapman, M.D., *Clinical Instructor in Medicine*
 Bernard Robert Cooperman, A.B., M.D., *Clinical Instructor in Medicine*
 Marshall Hannis Jacobson, A.B., M.D., *Clinical Instructor in Medicine*

132 *History of Medicine*
 One hour a week.

The Staff

236 *Clinical Microscopy*

The Staff

Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, and excreta. Three hours a week.

241 *Physical Diagnosis I*

The Staff

Theoretical considerations of the principles of physical diagnosis. One hour a week.

242 *Physical Diagnosis II*

The Staff

Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients. Six hours a week.

244 *Introduction to Medicine*

The Staff

Lectures covering the principles of internal medicine preparatory to clinical studies and training in the inpatient and outpatient services. Four hours a week.

320 *Medical Jurisprudence*

The Staff

Lectures on the legal and ethical rights of physicians, and on the legal problems with which the physician comes in contact. One hour a week for sixteen weeks.

325-26 *Clinical Clerkships*

Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. Eight weeks. D. C. General Hospital. The Staff

327-28 *Clinical Pathological Conferences I*

Choisser, Brown, and Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff. Clinical, laboratory, and necropsy findings are compared. One hour a week.

339-40 *Therapeutic Conferences I*

Staff of Medicine and Pharmacology

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. Two hours a week. University and D. C. General hospitals.

349-50 *Medical Conferences*

Two hours a week.

The Staff

421-22 *Outpatient Clinics*

Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. Six weeks. University Hospital. The Staff

423-24 *Clinical Clerkship*

Six weeks. University and Mt. Alto hospitals.

The Staff

427-28 *Clinical Pathological Conferences II*

Choisser, Brown, and Staff

Continuation of Medicine 327-28. One hour a week.

431 *Forensic Medicine*

Organized in conjunction with the University Law School for the purpose of acquainting medical students with their legal responsibilities. Three hours a week for four weeks. The Staff

NEUROLOGY AND NEUROLOGICAL SURGERY

- *Walter Freeman, Ph.D., M.D., *Professor of Neurology*
 James Winston Watts, B.S., M.D., *Professor of Neurological Surgery,*
Acting Executive Officer
 Hyman David Shapiro, M.D., *Associate Clinical Professor of Neurology*
 Robert Henry Groh, B.S., M.D., *Assistant Clinical Professor of Neurology*
 Jonathan Marshall Williams, M.D., *Assistant Clinical Professor of Neurological Surgery*
 James Peter Murphy, B.S., M.D., *Assistant Clinical Professor of Neurological Surgery.*
 Paul Chodoff, A.B., M.D., *Associate in Neurology*
 Hugo Victor Rizzoli, A.B., M.D., *Associate in Neurological Surgery*
 ‡George Davis Weickhardt, M.D., *Associate in Neurology*
 John Martin, M.D., Ph.D., *Associate in Neurological Surgery*
 Harvey Ammerman, B.S., M.D., *Clinical Instructor in Neurological Surgery*
 James Francis Hammill, B.S., M.D., *Clinical Instructor in Neurology*
 Garrett Swain, M.D., *Clinical Instructor in Neurological Surgery*

249 *Neurology (elective)* Freeman
 Methods used to study the form and function of the nervous system.
 Lectures and laboratory demonstrations. One hour a week.

250 *Neurology* Shapiro
 Introductory lectures on clinical neurology with specimens, lantern slides, and motion pictures. One hour a week.

331 *Neurology and Neurological Surgery* Watts, Freeman
 Clinical lectures and demonstrations. One hour a week.

333-34 *Neurology and Neurological Surgery, Clinical Clerkship* Freeman and Staff
 Instruction in history, physical examination, ordinary clinical procedures. Attendance at neurosurgical operations. Six students in rotation, two weeks. D. C. General Hospital.

335-36 *Neurological Conference* Freeman and Staff
 Clinical conference one afternoon a week followed by clinicopathologic study of specimens from current necropsies. Two and one-half hours a week. Six students in rotation, two weeks. D. C. General Hospital.

* On leave of absence 1954-55.
 ‡ On national service leave

- 431-32 *Neurology and Neurological Surgery* Shapiro, Watts
Clinic
Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures, disposition of neuro-psychiatric cases, ward rounds. Six students in rotation. Two hours a week. University Hospital.
- 433-34 *Clinical Neurology* Grob
Neurological inpatient examinations and demonstrations. Six students in rotation. Two hours a week. St. Elizabeths Hospital.
- 436 *Neurological Surgery (elective)* Watts and Staff
Lectures and motion picture demonstration of neurosurgical problems. One hour a week.

OBSTETRICS AND GYNECOLOGY

- John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology, Executive Officer*
- Radford Brown, M.D., *Clinical Professor of Obstetrics and Gynecology*
- Jacob Kotz, M.D., *Clinical Professor of Obstetrics and Gynecology*
- Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*
- George Nordlinger, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*
- Robert Henry Barter, B.S., M.D., *Associate Professor of Obstetrics and Gynecology*
- Samuel Mayer Dodek, A.M., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*
- Jeremiah Keith Cromer, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*
- Henry John Russell McNitt, B.S. in Med., M.D., *Associate in Obstetrics and Gynecology*
- James Albert Dusbabek, M.D., *Associate in Obstetrics and Gynecology*
- Clarence Kendall Fraser, Ph.B., M.D., *Associate in Obstetrics and Gynecology*
- Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*
- Floyd Sterling Rogers, M.D., *Associate in Obstetrics and Gynecology*
- Rufus Martin Roll, A.B., M.D., *Associate in Obstetrics and Gynecology*
- Katherine Elizabeth Parker, A.M., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Julius Robert Epstein, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Morton Selwyn Kaufman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Caroline Jackson, A.M., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- William Thurston Lady, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Jed Williams Pearson, Jr., A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Samuel Hazen Shea, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Thomas Miles Leonard, Ph.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

- Albert Seymour Bright, M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Shirley Sue Martin, M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Neel Jack Price, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Alexander LeSueur Russell, M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Thomas Ashton Wilson, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Marvin Peace Footer, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Donald Walters, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Joseph Marshall Friedman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
 Leon McNeely Liverett, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

- 254 *Normal Obstetrics* Fraser, Dodek
 Lectures and demonstrations on the physiology and management of normal pregnancy. One hour a week.
- 301-2 *Manikin Demonstrations* Footer
 The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class in weekly sessions. D. C. General Hospital.
- 337-38 *Abnormal Obstetrics* Parks, Nordlinger
 Lectures and demonstrations on the complications of pregnancy. One hour a week.
- 343-44 *Gynecology* Brown, Darner, Barter
 Lectures and demonstrations on the principles of gynecology. One hour a week.
- 351-52 *Clinical Clerkship* The Staff
 Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. Four weeks. D. C. General Hospital.
- 441-42 *Clinical Obstetrics* Parks, Barter
 Students participate in prenatal and postnatal clinic care; observe the course of labor and deliver patients under supervision; attend biweekly departmental conferences and daily ward rounds in the University and D. C. General hospitals.
- 443-44 *Clinical Gynecology* Parks, Barter
 Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals.

OPHTHALMOLOGY

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology, Executive Officer*

Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*

Richard Wallace Wilkinson, M.S. in Med., M.D., *Assistant Clinical Professor of Ophthalmology*

Carmon Robert Naples, B.S., M.D., *Associate in Ophthalmology*

Walter Joseph Romejko, M.D., *Associate in Ophthalmology*

William Paxson Chalfant, Jr., M.D., *Associate in Ophthalmology*

William Joseph Graham Davis, A.B., M.D., *Associate in Ophthalmology*

Robert Edward duPrey, B.S., M.D., *Clinical Instructor in Ophthalmology*

Robert Day, A.B., M.D., *Clinical Instructor in Ophthalmology*

Jorge Guillermo Ramirez, B.S., M.D., *Clinical Instructor in Ophthalmology*

Ralph John Carbo, Jr., A.B., M.D., *Clinical Instructor in Ophthalmology*

Melvin Gustavas Alper, A.B., M.D., *Clinical Instructor in Ophthalmology*

351-52 *Ophthalmology*

The Staff

A lecture course presenting the principles of ophthalmology, with special reference to topics of importance to the general practitioner. One hour a week for sixteen weeks.

447 *Clinic*

The Staff

During medical outpatient service, each student is given individual instruction in the ophthalmological aspects of systemic disease. University Hospital.

OTOLARYNGOLOGY

Daniel Bruce Moffett, A.B., M.D., *Professor of Otolaryngology, Executive Officer*

William Herndon Jenkins, M.D., *Clinical Professor of Otolaryngology*
Aubrey David Fischer, M.D., *Assistant Clinical Professor of Otolaryngology*

James Jerry McFarland, Jr., B.S., M.D., *Associate in Otolaryngology*
Catharine Birch, A.B., M.D., *Clinical Instructor in Otolaryngology*

Aram Glorig, Jr., B.S., M.D., *Clinical Instructor in Otolaryngology*
Jack Louis Levine, M.D., *Clinical Instructor in Otolaryngology*

Morris Edward Krucoff, B.S., M.D., *Clinical Instructor in Otolaryngology*
Russel Smith Page, Jr., A.B., M.D., *Clinical Instructor in Otolaryngology*

Willard Beecher Walters, B.S., M.D., *Clinical Instructor in Otolaryngology*
Albert Sidney Winer, A.B., M.D., *Clinical Instructor in Otolaryngology*

351 *Otolaryngology*

Moffett, Jenkins

Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. One hour a week.

354 *Bronchoscopy*

McFarland

A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope. One hour a week for two weeks.

356 *Clinic*

The Staff

Practical clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. One and one-half hours once a week.
D. C. General Hospital.

PATHOLOGY

- Roger Morrison Choisser, B.S., M.D., *Professor of Pathology, Executive Officer*
 Thomas Martin Peery, A.B., M.D., *Professor of Pathology, Executive Officer*
 Daniel Leigh Weiss, A.B., M.D., *Adjunct Clinical Professor of Pathology*
 William Newman, A.B., M.D., *Assistant Professor of Pathology*
 Frank Nelson Miller, B.S., M.D., *Associate Professor of Pathology*
 Lorenz Eugene Zimmerman, A.B., M.D., *Associate in Pathology*
 Edward Clifford McGarry, A.B., M.D., *Clinical Instructor in Pathology*
 William John Schewe, B.S., M.D., *Clinical Instructor in Pathology*

SPECIAL LECTURERS

- Elson Bowman Helwig, B.S., M.D., *Assistant Chief, Pathology Division, Armed Forces Institute of Pathology*
 Hans Frank Smetana, M.D., *Pathologist, Armed Forces Institute of Pathology*
 Henry Rappaport, M.D., *Pathologist, Armed Forces Institute of Pathology*
 Elizabeth Mapelsden Ramsey, A.B., M.D., *Research Associate and Pathologist, Department of Embryology, Carnegie Institution of Washington*
 Lent Clifton Johnson, B.S., M.D., *Pathologist, Armed Forces Institute of Pathology*

- 259-60 **Pathology** Choisser and Staff
 General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissues. Fall term, ten and one half hours a week; spring term, three hours a week.
- 261-62 **Necropsy** The Staff
 Students are required to attend and assist in the performance of necropsies at the University and D. C. General hospitals.
- 263-64 **Case Studies in Pathology** Peery
 Gross specimens, microscopic sections, and photographs on representative cases are demonstrated and discussed. One hour a week.
- 320 **Medical Jurisprudence** Miller
 Forensic pathology and toxicology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine. One hour a week.

**327-28 Clinical Pathological
Conference I**

Choisser, Brown, and Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff. Clinical, laboratory, and necropsy findings are compared. One hour a week.

**427-28 Clinical Pathological
Conference II**

Choisser, Brown, and Staff

Continuation of Pathology 327-28. One hour a week.

429-30 Clinical Pathological Conference III

Peery, Halley

Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there. One hour a week.

491-92 Surgical Pathology

Newman

Gross and microscopic surgical specimens are demonstrated and discussed. One hour a week.

493-94 Pathology Clerkship

Peery, Newman

A limited number of students receive training in surgical pathology and necropsies in the laboratory of the University Hospital.

PEDIATRICS

- Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics, Executive Officer*
- Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*
- Edward Lewis, M.D., *Clinical Professor of Pediatrics*
- William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
- Leroy Edward Hoeck, M.D., *Adjunct Clinical Professor of Pediatrics*
- John Augustine Washington, B.S., M.D., *Associate Clinical Professor of Pediatrics*
- Reginald Spencer Lourie, M.D., *Associate Clinical Professor of Pediatric Psychiatry*
- Joseph Michael LoPresti, B.S., M.D., *Assistant Professor of Pediatrics*
- Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
- Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
- Dorothy Steinle Jaeger-Lee, M.D., *Assistant Clinical Professor of Pediatrics*
- George Maksim, M.D., M.S. in Ped., *Assistant Clinical Professor of Pediatrics*
- William Allen Howard, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
- John Howell Peacock, B.S., M.D., *Associate in Pediatrics*
- Maynard Irving Cohen, A.B., M.D., *Associate in Pediatrics*
- Mary Katherine Laurence Sartwell, A.B., M.D., *Associate in Pediatrics*
- Allan Bertram Coleman, M.D., *Associate in Pediatrics*
- Charles Frederick Stiegler, A.B., M.D., *Associate in Pediatrics*
- Hugh Gambel Clark, A.B., M.D., *Associate in Pediatrics*
- Adrian Recinos, Jr., B.S., M.D., *Associate in Pediatrics*
- Robert Edward Martin, M.D., *Associate in Pediatrics*
- Charles Richard Webb, B.S., M.D., *Associate in Pediatrics*
- Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*
- Reginald Henry Mitchell, M.D., *Clinical Instructor in Pediatrics*
- Robert Orr Warthen, M.D., *Clinical Instructor in Pediatrics*
- Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*
- Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*
- Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*
- Muriel Schatz Sowers, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
- William Stark, A.B., M.D., *Clinical Instructor in Pediatrics*
- Margaret Frances Gutelius, A.B., M.D., *Clinical Instructor in Pediatrics*
- Roger Bergstrom, M.D., *Clinical Instructor in Pediatrics*

- 256 Pediatrics** McLendon and Staff
Lectures on physiology of the newborn, development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Two hours a week. Medical School.
- 357-58 Clinical Clerkship—General Pediatrics** LoPresti and Staff
Introduction to clinical pediatrics. Emphasis on bedside discussion and group seminars including the newborn. Ward rounds. Five students in rotation, two weeks. D. C. General Hospital.
- 359-60 Clinical Clerkship—Contagious Diseases** LoPresti and Staff
Conferences and bedside discussion in contagious and infectious diseases. Prevention and quarantine measures. Five students in rotation, two weeks. D. C. General Hospital.
- 361-62 Clinical Conference** McLendon and Staff
Required. Presentation and discussion by students of current patient problems. One hour a week. D. C. General Hospital.
- 363-64 Ward Rounds** Nicholson, LoPresti, and Staff
Bi-weekly ward rounds, with students and Resident Staff. D. C. General Hospital.
- 365-66 Psychiatry** Lourie and Staff
Lectures on normal behavior and emotional development. Clinical case analysis. Second, third, and fourth years.
- 457-58 Clinical Clerkship** Anderson, LoPresti, and Staff
Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students six weeks. Children's Hospital.
- 459-60 Outpatient Clinics** McLendon and Staff
Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital.
- 461-62 Clinico-pathological Conference** The Staff
Clinical and pathological discussion of recent patient history and laboratory data. Once a week. Children's Hospital.
- 463-64 Section Conferences** The Staff
Discussion of clinical problems of diagnosis and treatment of current patients. Twice a week. Children's Hospital.
- 465-66 Section Conference** The Staff
Surgical diagnosis, pre- and post-operative management. One hour a week. Children's Hospital.
- 467-68 Clinical Conference II** McLendon and Staff
Required. Case presentation by students. Staff and student discussion of diagnosis and management. One hour a week. Medical School.
- 469-70 Child Guidance and Development** Jaeger-Lee, Lourie
Lectures to second year class. Clerkship in fourth year including Well Baby Clinic. Group and class conferences.

PHARMACOLOGY

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology, Executive Officer*

Ralph Grafton Smith, M.D., Ph.D., *Adjunct Clinical Professor of Pharmacology*

Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*

Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*

Clarke Davison, Ph.D., *Assistant Professor of Pharmacology*

Harriet Mylander Maling, Ph.D., *Assistant Research Professor of Pharmacology*

Elizabeth Potts Anderson, Ph.D., *Assistant Research Professor of Pharmacology*

Moreswar Vithal Nadkarni, Ph.D., *Assistant Research Professor of Pharmacology*

Master of Arts or Master of Science in the field of Pharmacology (Columbia College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree with a major in Chemistry from this University, or the equivalent. The undergraduate program must include the following courses, or the equivalent: Biology or Zoology 1-2; Zoology 41-42; Physics 6, 7, 8, 55; Chemistry 11-12, 21, 22, 111-12, 151-52, 155, 156. Biochemistry 221-22 and Physiology 115, 117 are recommended as undergraduate electives if the candidate wishes to complete the work for the Master's degree in one year.

Required: Biochemistry 221-22; Physiology 115, 117; Pharmacology 261, 263, 267-68, 269-70, 299-300. The remaining required courses may be selected from Biochemistry 224, 225, 226, 231; Physiology 150; Bacteriology 112, 209, 230; Pharmacology 280.

Doctor of Philosophy (Graduate Council).—See page 92.

261 Pharmacology (5)

The Staff

Lectures and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. Five hours a week.

262 Pharmacology (1)

The Staff

Continuation of Pharmacology 261. One hour a week.

263 Pharmacology Laboratory (1)

The Staff

Laboratory instruction and demonstrations designed to complement Pharmacology 261. Open to qualified nonmedical students. Three hours a week.

265 Chemotherapy (1)

The Staff

Five lectures a week for three weeks. For graduate students. Time to be arranged.

- 267-68 *Pharmacological Research* (arr.) The Staff
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. Hours and credits to be arranged.
- 269-70 *Pharmacology Seminar* (1-1) The Staff
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. Two hours a week.
- 280 *Special Methods in Research* (arr.) The Staff
A course to familiarize the student with advanced chemical and physiological methods employed in pharmacological investigations. Open to qualified nonmedical students. Hours and credits to be arranged.
- 299-300 *Thesis* (3-3) The Staff
Required of Master of Arts and Master of Science candidates.
- 339-40 *Therapeutic Conferences I* Staff of Pharmacology and Medicine
Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. One hour a week.

PHARMACY

- Charles Watson Bliven, M.S., *Professor of Pharmacy, Executive Officer*
 Salvatore Joseph Greco, Ph.D., *Associate Professor of Pharmacy*
 Robert Meyer Leonard, Ph.D., *Assistant Professor of Pharmacology and Pharmacognosy*
 Willis Eugene Moore, Ph.D., *Assistant Professor of Pharmaceutical Chemistry*
 Carson Gray Frailey, A.B., LL.B., *Lecturer on Pharmaceutical Law*
 Harold Jerome Bobys, A.B., C.P.A., *Lecturer on Pharmacy Accounting*
 Ralph Bryan, B.S., *Lecturer on Pharmacy Management*
 Franklin Dero Cooper, M.S., *Instructor in Hospital Pharmacy*

SPECIAL LECTURERS

- William Paul Briggs, M.S., Sc.D., LL.D., *Executive Director and Secretary, American Foundation for Pharmaceutical Education; Pharmacy Training*
 Frederick John Cullen, Phar.G., M.D., *Executive Vice-President, The Proprietary Association; Drug Manufacture*
 John Christian Krantz, Jr., Ph.D., *Professor of Pharmacology, University of Maryland; Pharmacological Research*
 Justin Lawrence Powers, Ph.D., *Chairman, Committee on National Formulary, American Pharmaceutical Association; Official Drug Standards*
 George Potter Larrick, *Deputy Commissioner of Food and Drugs, Food and Drug Administration; Drug Control*
 Robert Philip Fischelis, B.S., Phar.D., Sc.D., *Secretary and General Manager, American Pharmaceutical Association; Pharmaceutical Organizations*
 Daniel Lamont Seckinger, M.D., Dr. P.H., *Director of Public Health, District of Columbia; Hygiene and Sanitation*
 PGad Bryan Morehouse, LL.M., A.B., *Assistant General Counsel in Charge of Compliance, Federal Trade Commission; Drug Trade Regulation*
 Louis Edward Kazin, Ph.G., *Associate Editor, Drug Topics; Contemporary Pharmacy*

Bachelor of Science in Pharmacy (School of Pharmacy).—Prerequisite: the Pharmacy curriculum in the Junior College, see pages 63-64. The requirements for the degree are stated on pages 139-41.

Master of Science in Pharmacy (School of Pharmacy).—Prerequisite: the degree of Bachelor of Science from an accredited institution. The requirements for the degree are stated on pages 142-44.

FIRST GROUP

- 1-2 *History and Literature of Pharmacy* (2-1) Bliven
Orientation in pharmacy; a survey of the development of the profession of pharmacy and the literature of pharmacy. Morning.
- 21-22 *General Pharmacy* (4-4) Greco, Cooper, Moore
Essential pharmaceutical processes; the theory and manufacture of pharmacopoeial and formulary galenical preparations; the pharmaceutical usage of certain classes of substances and preparations. *Pharmacy 21*.—Laboratory fee, \$9. Lecture (3 hours); laboratory (3 hours)—morning. *Pharmacy 22*.—Laboratory fee, \$15. Lecture (2 hours); laboratory (6 hours)—afternoon.
- 23 *Pharmacognosy* (3) Leonard
Macroscopic and microscopic. Prerequisite: Botany 1. Laboratory fee, \$9. Lecture (2 hours)—morning; laboratory (3 hours)—morning and afternoon.
- 25 *Pharmaceutical Calculations* (3) Bliven
The system of weights and measures and their application in the practice of pharmacy. Morning.

SECOND GROUP

- 101 *Inorganic Pharmaceutical Chemistry* (3) Moore
Inorganic chemistry as it applies to pharmacy. Study of reactions, preparations, and incompatibilities of inorganic pharmaceuticals. Prerequisite: Chemistry 21. Laboratory fee, \$9. Lecture (2 hours)—morning; laboratory (3 hours)—afternoon.
- 102 *Dispensing Pharmacy* (4) Greco
Compounding of typical prescriptions and a study of incompatibilities. Prerequisite: Pharmacy 22; concurrent registration: Pharmacy 110. Laboratory fee, \$15. Lecture (2 hours); laboratory (6 hours)—afternoon.
- 103 *Dispensing Pharmacy* (4) Greco
Continuation of Pharmacy 102. Laboratory fee, \$15. Lecture (2 hours)—morning; laboratory (6 hours)—afternoon.
- 105-6 *Pharmacology I* (2-2) Leonard
The general principles of pharmacology; locally acting drugs; chemotherapeutic agents; antibiotics; antianemia drugs; endocrine drugs; vitamins. Prerequisite or concurrent registration: Physiology 115. Afternoon.
- 107 *Pharmacy Accounting* (3) Bobys
The financial records required in the operation of a pharmacy. Morning.
- 110 *Chemistry and Pharmacy of Medicinal Products* (3) Moore
A study of the chemistry, structural relationship to action, and uses of the official and important non-official synthetic and natural organic

medicinal compounds. Prerequisite or concurrent registration: Chemistry 152. Morning.

111 *Chemistry and Pharmacy of Medicinal Products* (3) Moore

A continuation of Pharmacy 110, including laboratory work on the syntheses, chemical and physical properties, and incompatibilities of important organic medicinal products. Prerequisite: Pharmacy 110. Laboratory fee, \$12. Lecture (2 hours)—morning; laboratory (3 hours)—afternoon.

165-66 *Pharmacology II* (3-3) Leonard

Drugs acting on the central nervous system, the autonomic nervous system, and on specific tissues; toxicology; diagnostic drugs; biological assays. Prerequisite: Physiology 115 and 117; Pharmacy 106. Pharmacy 165—morning. Pharmacy 166.—Laboratory fee, \$15. Lecture (2 hours)—morning; laboratory (4 hours)—afternoon.

167-68 *Pharmacology III* (3-3) Leonard

Laboratory work in pharmacological technique. Prerequisite: Pharmacy 106. Prerequisite or concurrent registration: Pharmacy 165. Laboratory fee, \$15 a term. Time to be arranged.

172 *Advanced Dispensing Pharmacy* (3) Greco

The study of special problems in dispensing pharmacy. Prerequisite: Pharmacy 103. Laboratory fee, \$15. Time to be arranged.

173 *Quantitative Pharmaceutical Analysis* (3) Bliven, Moore

Drug analysis. Prerequisite: Chemistry 22. Laboratory fee, \$15. Lecture (1 hour); laboratory (6 hours). Time to be arranged.

176 *Pharmaceutical Law* (2) Frailey

Morning.

178 *Pharmacy Management* (4) Bryan

Policies and operations relating to the management of a pharmacy. Morning.

182 *Advanced Pharmacology I* (2) Leonard

Special problems in the field of pharmacology. Prerequisite or concurrent registration: Pharmacy 106. (Not offered in 1954-55.)

184 *Special Problems in Pharmacy* (arr.) Greco, Moore

Directed laboratory and library research on special problems in pharmacy and pharmaceutical chemistry. For selected undergraduate students. Prerequisite or concurrent registration: Pharmacy 102 and 110. Time, credits, and fees to be arranged.

188 *Survey* The Staff

A symposium covering the various phases of pharmacy. Required of all majors in Pharmacy. No academic credit. Tuition fee: \$15. Morning.

- 190 *Hospital Pharmacy* (1) Cooper
Organization and functions of hospitals; organization and operation of a hospital pharmacy; professional and sickroom supplies. Prerequisite: Pharmacy 102. Lecture (1 hour)—morning.
- 192 *Hospital Pharmacy: Prescription Practice* (1) Cooper
Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 102. Laboratory (3 hours)—time to be arranged. (Also offered 1954 summer term.)
- 194 *Manufacturing Pharmacy* (3) Cooper
The manufacture of bulk pharmaceuticals in the University Hospital pharmacy. Elective for seniors. Lecture (1 hour)—afternoon; laboratory (6 hours)—time to be arranged. (Also offered 1954 summer term.)

THIRD GROUP

- 201-2 *Survey of Pharmaceutical Literature* (1-1) The Staff
Assigned library research on the development of pharmaceutical literature. Time to be arranged.
- 203-4 *Special Problems in General Pharmacy* (2-2) Greco
Investigations of problems involved in the manufacture of pharmaceutical preparations on a laboratory scale. Laboratory fee, \$15 a term. (Not offered in 1954-55.)
- 206 *Pharmaceutical Technology* (4) Greco, Cooper
A study of advanced manufacturing pharmacy, including formula development for the different types of preparations. Laboratory fee, \$15. Lecture (2 hours); laboratory (6 hours). (Not offered in 1954-55.)
- 215-16 *Advanced Pharmacology II* (3-3) Leonard
Special studies on biological assay methods. Laboratory fee, \$15 a term. Lecture (1 hour); laboratory (6 hours). (Not offered in 1954-55.)
- 221-22 *Chemistry of Naturally Occurring Organic Medicinal Products* (5-5)
A study of the isolation, chemistry, and relationship between the constitution and physiologic action of alkaloids, fats and sterols, terpenes, carbohydrates, glycosides, and the various biological products. Laboratory fee, \$15 a term. Lecture (3 hours); laboratory (6 hours). (Not offered in 1954-55.)
- 223-24 *Chemistry of Synthetic Organic Medicinal Products* (5-5) Moore
A study of the chemistry and relationship between the structure and physiologic action of hydrocarbons and their derivatives, nitrogen compounds, oxygen compounds, sulfur compounds, and organo-metallic compounds. Laboratory fee, \$15 a term. Lecture (3 hours); laboratory (6 hours). (Pharmacy 223 not offered in 1954-55.) Pharmacy 224, time to be arranged.

- 226 *Determination of Physical Constants* (2)
A laboratory and lecture study of the determination of physical constants of medicinal products. Laboratory fee, \$15. Lecture (1 hour); laboratory (3 hours). (Not offered in 1954-55.)
- 228 *Food and Drug Analysis* (4) Bliven, Moore
A study of the composition of some common foods and food products. Laboratory fee, \$15. Lecture (2 hours); laboratory (6 hours). (Not offered in 1954-55.)
- 231 *Pharmacology of Anesthetic Drugs* (4) Leonard
Theoretical consideration of the principles of anesthesiology and laboratory study of the action of anesthetic drugs. Laboratory fee, \$15. (Not offered in 1954-55.)
- 234 *Pharmacology of Autonomic Drugs* (4) Leonard
A study of action and interaction of drugs principally influencing the autonomic nervous system. Laboratory fee, \$15. (Not offered in 1954-55.)
- 236 *Experimental Toxicology* (4) Leonard
Pharmacological action of toxic drugs correlated with chemical and pathological studies. Laboratory fee, \$15. (Not offered in 1954-55.)
- 251-52 *Graduate Seminar* (1-1) The Staff
Current problems and trends in pharmacy. Required of all students registered for the Master's degree. (Not offered in 1954-55.)
- 295-96 *Research and Thesis* (arr.) The Staff
Investigations of special problems in the major field of interest and thesis preparation. Credit hours (not to exceed 6 credit hours) and fees to be arranged. (Not offered in 1954-55.)

PHILOSOPHY

**Charles Edward Gauss, Mus.B., Ph.D., Elton Professor of Philosophy,
Executive Officer**
Herman Lynn Womack, A.M., Associate in Philosophy

Bachelor of Arts with a major in Philosophy (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College. see page 62.

Required: in addition to the general requirements stated on pages 77-82, the grade of "pass" for the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is summarized under the following general headings: (1) history of philosophy; (2) logic and theory of knowledge, (3) social philosophy. The Department of Philosophy provides a proseminar (Philosophy 199-200) intended to assist the student in preparing himself for his major examination.

Master of Arts in the field of Philosophy (Columbian College).—Prerequisite: an undergraduate major in Philosophy at this University or the equivalent, as attested by the passing of this University's major examination in Philosophy; the following specific courses or the equivalent: Philosophy 111-12, 121-22, and 131.

Required: the general requirements as stated on pages 83-86. As much as possible of the required twenty-four credit hours in course work should be in third-group courses. Students electing second-group courses are expected to do more intensive work than is demanded of undergraduates. A general written examination on the problems of the field of Philosophy and a departmental oral examination are required.

FIRST GROUP

51-52 *Introduction to Philosophy (3-3)*

The Staff

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. Morning and evening sections. (Also offered 1954 summer term.)

SECOND GROUP

111-12 *History of Philosophy (3-3)*

Womack

History of western philosophy from Thales to Kant. Evening.

113 *History of Nineteenth and Twentieth Century Philosophy (3)*

Gauss

A history of ideas and influences explaining contemporary thought. Evening.

121-22 *Logic and Scientific Method (3-3)*

Gauss

The study of formal logic and the means of investigation and description employed in the sciences; theory of scientific inference and prediction. Morning.

131 *Ethics* (3)

An examination of ethical theories, the relation of ethics to social science and psychology. (Not offered in 1954-55.)

142 *Metaphysics* (3)

Problems related to the formation of a world view. Emphasis on the data of modern science and the problems posed by contemporary philosophy. (Not offered in 1954-55.)

162 *Aesthetics* (3)

Gauss

The problems of appreciation and judgment in the arts, and of theories of the process of artistic creation. Emphasis on contemporary arts and criticism. Evening.

171-72 *American Philosophy* (3-3)

Womack

A general history of philosophy in the United States, correlated with the development of European thought.

Summer term 1954—Philosophy 172 (3).

180 *Philosophy of History* (3)

Gauss

Problems of historical knowledge and explanation. Critique of philosophies of history. (Not offered in 1954-55.)

193 *Topics in Contemporary Philosophy* (3)

Gauss

(Not offered in 1954-55.)

199-200 *Proseminar: Readings for the Major* (3-3)

Gauss

Conferences and group discussions. Evening.

THIRD GROUP

201-2 *Readings and Research* (3-3)

The Staff

Advanced readings and reports. Investigation of special problems. Time to be arranged.

211-12 *Seminar in Plato and Aristotle* (3-3)

Gauss

Evening.

213-14 *Seminar in Seventeenth and Eighteenth Century Philosophy* (3-3)

Gauss

(Not offered in 1954-55.)

216 *Seminar in Kant* (3)

Gauss

(Not offered in 1954-55.)

299-300 *Thesis* (3-3)

The Staff

PHYSICAL EDUCATION FOR MEN *

William Henry Myers, A.M., *Professor of Physical Education for Men*
Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men, Executive Officer*

Milo Frederick Christiansen, B.S., M.R., *Professorial Lecturer in Physical Education*

Raymond George Hanken, B.S., in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*

Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Men*

William Jennings Reinhart, B.B.A., *Associate in Physical Education for Men*

Eugene Hugh Sherman, Sr., B.S., *Associate in Physical Education for Men*

This Department includes all the recognized athletic activities of the men students of the University.

Two years of Physical Education (Physical Education 1-2 and 11-12) are required of all men for graduation, except those students exempt under the regulations stated on page 45.

Upon entering the University, all freshmen or other undergraduate students who have not fulfilled the Physical Education requirements are given a medical examination. Assignments for medical examinations will be given at the time of registration. The students who satisfy the requirements of the medical examination are then given a physical efficiency test in the general bodily skills of agility, endurance, and strength; and in swimming. If the physical efficiency test is passed, the student may elect from the following list of activities:

Setting-up Exercises (stretching exercises)

Body Building Exercises (gymnastic apparatus and weight lifting skills)

Competitive Exercises (modified games and sports)

Swimming Exercises (distance, speed, and life saving)

If the physical efficiency test is not passed, the student will be assigned to a class for training in the above activities in the order listed.

The Department furnishes gymnasium uniforms and personal equipment upon a small payment.

Bachelor of Science in Physical Education (School of Education).—Prerequisite: the Physical Education for Men curriculum in the Junior College, see page 65. The requirements for the degree are stated on pages 148-49, 150-51.

FIRST GROUP

1-2 *Freshman Physical Education* • (2-2)

Four periods of supervised activity a week. Locker and towel fee, \$3.
a term. Assignment for activities and time to be arranged.

* The University is not responsible for injuries received in intercollegiate or intramural games or in any of the activities of the departments of Physical Education.

- 11-12 *Sophomore Physical Education** (2-2) The Staff
Four periods of supervised activity a week. Locker and towel fee, ‡ \$3 a term. Assignment for activities and time to be arranged.
- 43-44 *Techniques of Physical Education* DeAngelis, Krupa
Motor Activities (2-2)
Fundamental skills, rules, and organization. Locker and towel fee, ‡ \$3 a term. Morning and afternoon sections.
- 45-46 *Methods and Materials for Teaching* The Staff
Individual and Dual Sports in
Secondary Schools (2-2)
Tennis, golf, swimming, wrestling, badminton, bowling. Locker and towel fee, ‡ \$3 a term. Afternoon.
- 47 *Introduction to Physical Education* (2) Krupa
An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. Morning.
- 48 *Introduction to Recreation* (2) Hanken
The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership needed. Time to be arranged.
- 49 *Human Anatomy* (3) Lawrence
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.
- 50 *Kinesiology* (3) Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. Morning.
- 58 *First Aid and Care of Athletic* De Angelis, Lawrence
Injuries (2)
Prevention and emergency care of injuries of all types, with special reference to first aid, bandaging, and massage. A practical course. Prerequisite: Biology 1-2 or Zoology 1-2. Afternoon.

SECOND GROUP

- 101 *Physical Education in the Elementary* Atwell, Burtner
School (3)
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials in tumbling, games, rhythms, and self-testing activities. Morning and evening sections.

* Freshmen and sophomores in the School of Engineering and the School of Pharmacy are required to take two, instead of four, periods of Physical Education a week for which they receive one, instead of two, credits a term.

‡ The locker and towel fee is required for registration in one or more of the activity courses.

- 103 *History and Principles of Physical Education* (3) Atwell, Krupa
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. Morning.
- 105-6 *Corrective Physical Education and Physical Examinations* (3-3) Lawrence
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.
- 107 *Techniques for Teaching Recreational Dance* (1) Burtner
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Locker and towel fee,* \$3. Afternoon.
- 109-10 *Leadership Organization in the Intramural Program* (2-2) DeAngelis
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. Afternoon.
- 113-14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4-2 to 4) The Staff
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Morning and afternoon sections.
- 115-16 *Methods and Materials for Teaching Team Sports in Secondary Schools* (2 to 4-2 to 4) The Staff
Football, basketball, baseball, track and field. Locker and towel fee,* \$3 a term. Morning.
- 117 *Methods of Teaching Modern Dance* (1 to 2) Burtner
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary-school and adult age levels. Locker and towel fee,* \$3 a term. Afternoon.
- 118 *Dance Production* (1 to 2) Burtner
Choreography for dance concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* \$3. Afternoon.
- 121 *School and Community Health Programs* (3) Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.

* The locker and towel fee is required for registration in one or more of the activity courses.

- 122 *Methods and Materials of Health Education* (3) Atwell
Organization and presentation of health materials for each age level.
Prerequisite: Biology 1-2 or Zoology 1-2. Morning.
- 131 *Tests and Measurements in Physical Education* (3) Krupa
Critical survey tests in physical activities, methods of test construction, elementary statistics. Morning.
- 132 *Camp Leadership* (1) Atwell
Survey course in camp counseling. Afternoon.
- 133-34 *Observation and Student Teaching* Atwell, Myers
(3-3 to 6)
Assignments are made to schools in Washington and the vicinity.
Physical Education 134, student teaching fee, \$30. Time to be arranged.
- 136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques and composition. Evening.
- 138 *Organization and Administration of Physical Education* (3) Atwell, Myers
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. Morning.
- 151-52 *Recreational Leadership Activities* Christiansen
(1 to 3-1 to 3)
Fall term: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring term: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. 1954-55 and alternate years. Evening.
- 161 *Community Organization for Recreation* Christiansen
(3)
Resources, principles, and methods in organizing community recreation services. 1955-56 and alternate years. Evening.
- 162 *Administration of Community Recreation Programs* (3) Christiansen
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. 1955-56 and alternate years. Evening.

PHYSICAL EDUCATION FOR WOMEN *

Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*
Executive Officer

Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*

Elizabeth Burtner, A.M., *Associate Professor of Physical Education for Women*

Loretta May Stallings, A.M., *Instructor in Physical Education for Women*

Helen Taylor Harris, A.M., *Associate in Physical Education for Women*

Camille Jacob Craig, A.M., *Associate in Physical Education for Women*

Two years of Physical Education (Physical Education 1-2 and 11-12) are required of all women for graduation, except of students exempt under the regulations stated on page 45. In the fall a complete medical and physical examination is given each student for the purpose of discovering individual needs. Those students whose examinations indicate the desirability of remedial or restricted activity are assigned to a program especially adapted to their needs. This limited program includes moderate sports and individual exercises in small groups under careful supervision.

The required costume for Physical Education classes may be purchased at the University Book Store.

Bachelor of Science in Physical Education (School of Education).—Prerequisite: the Physical Education for Women curriculum in the Junior College, see page 65. The requirements for the degree are stated on pages 148-49, 151-52.

FIRST GROUP

1-2 *Freshman Physical Education (1-1)*

One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each season.

Fundamentals of health and physical education; study of the factors involved in the maintenance of health and in the efficient use of the body. Morning and afternoon sections.

Activities: riding, field hockey, folk and square dance, modern dance, basketball, badminton, body mechanics, swimming, tennis, archery, golf, canoeing. Locker and towel fee, ‡ \$3 a term. Morning and afternoon sections.

11-12 *Sophomore Physical Education (1-1)*

Two periods a week chosen from the activities offered each season as listed under Physical Education 1-2. Locker and towel fee, ‡ \$3 a term. Two periods a week; morning and afternoon sections.

* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education.

‡ The locker and towel fee is required for registration in one or more of the activity courses.

- 43-44 *Techniques of Physical Education Motor Activities (2-2)* The Staff
Fundamental skills, rules, and organization. Locker and towel fee,* \$3 a term. Morning and afternoon sections.
- 47 *Introduction to Physical Education (2)* Krupa
An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. Morning.
- 48 *Introduction to Recreation (2)* Hanken
The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership. Time to be arranged.
- 49 *Human Anatomy (3)* Lawrence
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.
- 50 *Kinesiology (3)* Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. Morning.
- 51-52 *Methods and Materials for Teaching Sports in Secondary Schools and Colleges (2-2)* The Staff
Team sports: basketball, hockey, softball, soccer, speedball, volleyball. Individual and dual sports: badminton, tennis, golf, archery, canoeing. Locker and towel fee, \$3 a term. Afternoon.
- 58 *First Aid and Care of Athletic Injuries (2)* DeAngelis, Lawrence
Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1-2 or Zoology 1-2. Afternoon.

SECOND GROUP

- 101 *Physical Education in the Elementary School (3)* Atwell, Burtner
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities. Morning and evening sections.
- 103 *History and Principles of Physical Education (3)* Atwell, Krupa
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. Morning.

*The locker and towel fee is required for registration in one or more of the activity courses.

- 105-6 *Corrective Physical Education and Physical Examinations (3-3)* Lawrence
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.
- 107 *Techniques for Teaching Recreational Dance (1)* Burtner
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Locker and towel fee,* \$3 a term. Afternoon.
- 109-10 *Leadership Organization in the Intramural Program (2-2)* DeAngelis
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. Afternoon.
- 111-12 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges (1 to 2-1 to 2)* The Staff
Fall Term: group gymnastics, tumbling, fundamentals of movement; continued instruction in sports. Spring term: swimming and diving, life saving and water safety, synchronized swimming. Locker and towel fee,* \$3 a term. Afternoon.
- 113-14 *Methods and Practice in Teaching Physical Education Activities (2 to 4-2 to 4)* The Staff
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Morning and afternoon sections.
- 117 *Methods of Teaching Modern Dance (1 to 2)* Burtner
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary-school and adult age levels. Locker and towel fee,* \$3 a term. Afternoon.
- 118 *Dance Production (1 to 2)* Burtner
Choreography for dance, concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* \$3 a term. Afternoon.
- 121 *School and Community Health Programs (3)* Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.

* The locker and towel fee is required for registration in one or more of the activity courses.

- 122 *Methods and Materials of Health Education* (3) Atwell
Organization and presentation of health materials for each age level.
Prerequisite: Biology 1-2 or Zoology 1-2. Evening.
- 131 *Tests and Measurements in Physical Education* Krupa
(3)
Critical survey of tests in physical activities, methods of test construction, elementary statistics. Morning.
- 132 *Camp Leadership* (1) Atwell
Survey course in camp counseling. Afternoon.
- 133-34 *Observation and Student Teaching* Atwell, Myers
(3-3 to 6)
Assignments are made to schools in Washington and the vicinity.
Physical Education 134, student-teaching fee, \$30. Time to be arranged.
- 136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques and composition. Evening.
- 138 *Organization and Administration of Physical Education* (3) Atwell, Myers
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. Morning.
- 151-52 *Recreational Leadership Activities* Christiansen
(1 to 3-1 to 3)
Fall term: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring term: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. 1954-55 and alternate years. Evening.
- 161 *Community Organization for Recreation* Christiansen
(3)
Resources, principles, and methods in organizing community recreation services. 1955-56 and alternate years. Evening.
- 162 *Administration of Community Recreation Programs* (3) Christiansen
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. 1955-56 and alternate years. Evening.

PHYSICAL MEDICINE AND REHABILITATION

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation, Executive Officer*

Josephine Jordan Buchanan, A.M., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*

Alvin Knudson, B.S., M.D., *Associate in Physical Medicine and Rehabilitation*

Jasper Wayne McFarland, B.S., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*

150 *Elements of Physical Medicine*

In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability. Emphasis is placed on normal and abnormal peripheral nerve testing (electrodiagnosis), muscle testing, joint range, and other physical disability measurements.

The Staff

351-52 *Advanced Physical Medicine*

Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties.

The Staff

467-68 *Clinical Studies*

Clinical teaching and demonstration at the University Hospital.

The Staff

485 *Research (arr.)*

Open to medical students and qualified nonmedical students. Time and credits to be arranged.

The Staff

PHYSICS

Thomas Benjamin Brown, Ph.D., *Professor of Physics, Executive Officer*
 Walter Lynn Cheney, Ph.D., *Professor of Physics*
 George Gamow, Physics D., *Professor of Theoretical Physics*
 George Martin Koehl, A.M., *Professor of Physics*
 Zoltan Bay, Ph.D., *Research Professor of Physics*
 James Gwavas Beckerley, Ph.D., *Professorial Lecturer in Physics*
 Lewis Edward Slack, Ph.D., *Associate Professor of Physics*
 Edward Turner, Jr., M.S., *Assistant Professor of Physics*
 Victor Philippe Henri, D.Sc., *Lecturer in Physics*
 Herman Hedberg Hobbs, B.S., *Instructor in Physics*
 Albert Prentice Kenyon, A.M., *Associate in Physics*
 John Newell Tevis, A.M., *Associate in Physics*
 DeWitt Fisher, A.M., *Associate in Physics*
 Walter Louis Asling, A.M., *Associate in Physics*
 Robert Franklin Custard, B.S. in Eng., LL.B., *Associate in Physics*

Bachelor of Arts or Bachelor of Science with a major in Physics (Columbian College—Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 62-63. The following courses must be included: Physics 6, 7, 8, and 55; Chemistry 21; Mathematics 19 and 20.

Required, for both the Bachelor of Arts degree and the Bachelor of Science degree, the general requirements as stated on pages 77-82, including Mathematics 132 and Physics 101, 105, 106, 113, 132, and 155 or 156, plus one of the following: Physics 102, 114, 118, 123, and 128.

Master of Science in the field of Physics (Columbian College).—Prerequisite: Bachelor's degree with a major in Physics at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The thirty hours of required work must include Mathematics 171 (if not taken earlier) and Physics 211-12, 255 or 256, and 291-92.

Doctor of Philosophy (Graduate Council).—See page 92.

Bachelor of Science in Engineering with an option in Physics (School of Engineering).—For requirements, see pages 127-29 and 133.

Bachelor of Arts in Education with a teaching field in Physics (School of Education).—Prerequisite: the Education curriculum, page 64.

Required, the Physics option, page 157, and the professional courses listed on pages 158-59.

FIRST GROUP

5 General Physics (3)

Koehl and Staff

An introduction to the phenomena of light, heat, force, energy, and the properties of matter. This course may be taken as a terminal course by non-science students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geom-

etry. Material fee, \$9. Lecture (1 hour); recitation (1 hour); laboratory (2½ hours). Morning, afternoon, and evening sections. (Also offered 1954 summer term.)

Physics 5x, same as 5, offered spring term. Lecture (1 hour)—morning and evening sections; recitation (1 hour)—morning, afternoon, and evening sections; laboratory (2½ hours)—morning, afternoon, and evening sections.

- 6 *General Physics* (3) Cheney and Staff
Mechanics, wave-motion, and sound. Offered spring term. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, \$9. Lecture (1 hour); recitation (1 hour); laboratory (2½ hours). Morning, afternoon, and evening sections.

- 7 *General Physics* (3) Turner and Staff
Elementary electricity and magnetism. Offered fall term. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, \$9. Lecture (1 hour); recitation (1 hour); laboratory (2½ hours). Morning, afternoon, and evening sections. (Also offered 1954 summer term.)

- 8 *General Physics* (3) Brown and Staff
This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X-rays), atomic and molecular structure, radioactivity, nuclear physics, the quantum theory of matter and radiation, and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7. Morning and evening sections. (Also offered 1954 summer term.)

- 55 *Physical Measurements* (3) Cheney and Staff
Theory and methods of precise measurement in the several fields of physics. Prerequisite: Physics 6 and 7, and Mathematics 19. Material fee, \$9. Lecture (2 hours); laboratory (2½ hours)—afternoon and evening sections.

SECOND GROUP

- 101 *Mechanics* (3) Slack
Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 6; Mathematics 20. 1954-55 and alternate years, morning. 1955-56 and alternate years, evening.

- 102 *Heat and Thermodynamics* (3) Cheney
Thermometry, calorimetry, heat conduction, the laws of thermodynamics with application to physical systems. Prerequisite: Physics 8; Mathematics 20. 1955-56 and alternate years. Evening.

- 105 *Principles of Electricity* (3) Turner
Fundamental phenomena of electricity and magnetism; circuit theory, including elementary alternating-current circuits; terrestrial magnetism; atmospheric electricity. Prerequisite: Physics 8; Mathematics 20. 1954-55 and alternate years, evening. 1955-56 and alternate years, morning.

* This prerequisite may be waived for students who have credit for a high school Physics course which included individual laboratory work, providing they pass the qualifying examination given at the dates specified in the University calendar.

- 106 Optics (3)** Koehl
Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 8; Mathematics 20. 1954-55 and alternate years, evening. 1955-56 and alternate years, morning.
- 110 Philosophical Foundations of Modern Physics (3)** Gamow
A non-mathematical treatment. Einstein's ideas of space, time, and motion; the expanding universe; quantum theories concerning the structure of matter; protons, neutrons, mesons, and other elementary particles; the principle of uncertainty; statistical methods of physics; application of physics to the problems of living matter. Prerequisite: high school algebra and one year of college science. Not open to majors in physics or chemistry. 1954-55 and alternate years. Morning.
- 113x Atomic Physics (3)** Slack
Properties of the electron and the other fundamental particles of physics; the photoelectric effect, X-rays and crystal structure, wave aspects of particles, elements of the quantum theory, atomic spectra and atomic structure. Prerequisite: Physics 8; Mathematics 20. 1954-55 and alternate years, morning. 1955-56 and alternate years, evening.
- 114 Statistical Physics (3)**
Introduction to the applications of both classical and quantum statistics to the physics of solids, liquids, and gases. Topics discussed include fluctuations in gases and liquids, equipartition of energy, specific heats of solids, and experimental errors. Prerequisite: Physics 113. (Not offered in 1954-55.)
- 118 Introduction to Solid State Physics (3)**
Survey of representative aspects of the physics of solids. Topics to be discussed include the lattice energy of ionic crystals, elastic vibrations of crystals, thermal, dielectric, magnetic properties, superconductivity, the electronic structures of metals, semiconductors. Prerequisite: Physics 113; Mathematics 20. 1955-56 and alternate years.
- 123 Nuclear Physics (3)** Gamow
Structure and stability of atomic nuclei, spontaneous transformations, nuclear reactions, astrophysical applications, nuclear fission. Prerequisite: Physics 113. Evening.
- 128 Sound (3)** Cheney
Production, propagation, and detection of sound waves, vibrations of sounding bodies, acoustic instruments and acoustic measurements. Prerequisite: Physics 8; Mathematics 20. Evening.
- 132 Electronics (3)** Brown and Staff
The phenomena of electron emission from solids; the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 8 and 55, and Physics 125 or Electrical Engineering 10. Material fee, \$9. Lecture (2 hours); laboratory (2 hours)—afternoon and evening sections.

- 133 *Electronic Circuits* (3) Brown
A continuation of Physics 132. Includes basic radiofrequency applications of electron tubes, and special types of tubes such as klystrons, resonators, and magnetrons. Lectures and problems. Prerequisite: Physics 132; Electrical Engineering 107. Morning.
- 136x *Electrical Conduction in Gases* (3) Brown
Fundamental theory and principal applications. Ionization currents, Townsend currents, and plasma currents; ion sheaths and probe measurements; glow discharges, arcs, sparks; ionization chambers, counter tubes, vacuum gauges, glow lamps, thyatrons, and ignitrons. Prerequisites: Physics 8; Mathematics 20. Evening.
- 155-56 *Advanced Physical Measurements* (3-3) Slack
Optional programs of experiments in electricity and magnetism, optics, or atomic physics. Corresponding prerequisites are Physics 105, 106, or 113. In addition, Physics 55 is a general prerequisite. Material fee, \$9. Saturday.
- 191 *Nuclear Reactors* (3) Beckerley
Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 8; Mathematics 20. 1955-56 and alternate years. Evening.

THIRD GROUP

- 211 *Classical Physical Theory* (3) Cheney
Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 132, 171. (Mathematics 171 may be taken concurrently.) Evening.
- 212 *Classical Physical Theory* (3) Cheney
Dynamics of elastic bodies and fluids, electromagnetic field theory. Prerequisite: Physics 101 and 105; Mathematics 132, 171. Evening.
- 213 *Electromagnetic Waves* (3) Brown
Electromagnetic theory for light and radio waves, including an introduction to guided waves and cavity resonators. Prerequisite: Physics 105 and Mathematics 132, or their equivalents. 1955-56 and alternate years. Evening.
- 221 *Wave Mechanics* (3) Gamow
Criticism of classical ideas of mechanics and a formulation of wave-mechanical equations; matrix mechanics and its relation to wave mechanics; applications to various problems of atomic, molecular, and nuclear Physics. Prerequisite: Physics 113 and 211-12. 1954-55 and alternate years. Evening.
- 222 *Quantum Electrodynamics and Field Theories* (3) Gamow
Relativistic wave equations, quantization of electromagnetic fields, interaction between matter and radiation, elementary particles and

their transformations. Prerequisite: Physics 221. 1954-55 and alternate years. Evening.

227 *Statistical Thermodynamics* (3)

Gamow

Axiomatic formulation of thermodynamics. Thermodynamic potentials and equilibria. The method of Gibbs. Statistical theory based on indistinguishability of particles. Bose-Einstein and Fermi-Dirac statistics. Applications to radiation, electron gas, etc. Prerequisite: Physics 102, 114; Mathematics 132. 1955-56 and alternate years.

228 *Relativity and Cosmology* (3)

Gamow

Lorentz transform and four-dimensional formulation. Tensor algebra and the theory of curved spaces. Einstein's theory of gravitation. Relativistic cosmology. Theory of the expanding universe. Modern cosmological theories. Relativistic thermodynamics. Prerequisite: Physics 211, 212. 1955-56 and alternate years.

255-56 *Graduate Laboratory* (4-4)

Brown

Special topics. One term of this course is required of all Master's candidates in physics. Not open to undergraduates. Material fee, \$9 a term. Saturday.

291-92 *Seminar: Recent Developments in Physics*

The Staff

(1-1)

Individual investigations of special problems. All students registered for a Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained by registering for this course during the last two terms of residence; this credit, however, is based upon the seminar work during the entire period of residence. Alternate weeks, Monday evening.

299-300 *Thesis* (3-3)

The Staff

Time and fees to be arranged.

PHYSIOLOGY

Errett Cyril Albritton, A.B., M.D., *Fry Professor of Physiology*
 Chester Elwood Leese, Ph.D., *Professor of Physiology, Executive Officer*
 Joseph William Still, M.D., M.P.H., *Assistant Professor of Physiology*
 Melvin Harold Heiffer, Ph.D., *Assistant Research Professor of Physiology*
 Hyman Erwin Steinman, M.D., *Lecturer in Physiology*
 Louis Pat Munan, M.S., *Associate in Physiology*
 William Spector, A.M., *Associate in Physiology*
 Charles Arthur Toompas, A.M., *Instructor in Physiology*

Master of Arts or Master of Science in the field of Physiology (Columbian College).—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Biology, Chemistry, Physics, or Zoology from this University, or the equivalent. The undergraduate work should include the equivalent of Biology 1-2 or Zoology 1-2, and Zoology 41-42; Chemistry 11-12, 21, 151-52; Physics 5, 6, and 7. It is recommended that Biochemistry 221-22 be taken as an elective. A Bachelor's degree which includes the premedical requirements is acceptable for admission to candidacy.

Required: the general requirements as stated on pages 83-86. In addition to the thesis, the thirty hours of required work should include Physiology 201, 221 or 222, 231, 234, 236, 238, 240, and at least three credit hours of research (Physiology 295 or 296). Biochemistry 221-22 is required unless it was included in the undergraduate program.

Doctor of Philosophy (Graduate Council).—See page 92.

115 Physiology (3)

Lectures for nonmedical students covering the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one term of a biological science. Section A: Tues. and Thurs., 8:45 to 10 A.M.; section B: Tues. and Thurs., 5:10 to 6:25 P.M. Leese

117 Experimental Physiology (1)

Laboratory exercises in the fundamentals of physiology, for nonmedical students. Prerequisite or concurrent registration: Physiology 115 or the equivalent. Material fee, \$15. Sat., 9:10 to 12 A.M. Greene and Staff

120 Physiology of Endocrine Activity (2)

For nonmedical students. The circulatory, metabolic, reproductive, growth, and other adaptations, immediate and long term, accompanying and affecting endocrine activity. Prerequisite: Physiology 115 or the equivalent. Tues. and Thurs., 6:10 P.M. Albritton, Munan

130 The Psycho-physiology of Personality (2)

For nonmedical students. Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. Tues. and Thurs., 5:10 P.M. Leese

- 150 *Advanced Physiology* The Staff
One hundred twenty-five physiological lectures and one hundred twenty-five laboratory hours devoted to the major divisions of the subject. For medical students.
- 201-2 *Experimental Method* (1-1) Albritton
For nonmedical graduate students. Design of controlled experiments in medical or biological investigation; errors in design; criticism and judgment of evidence; and tests of the statistical significance of experimental results. Sat., 9:00 A.M.
Physiology 201X, same as 201, offered spring term.
- 211-12 *Problems in Physiology* (arr.) The Staff
For nonmedical graduate students. Open to undergraduate students with the approval of the Department. Prerequisite: Physiology 115 and 117, or the equivalent. Time and credits to be arranged.
- 221-22 *Physiology Seminar* (1-1) The Staff
For nonmedical students undertaking graduate work in physiology. Prerequisite: Physiology 115 and 117, or the equivalent. Weekly throughout the year.
- 231 *Advanced Physiology of Circulation and Respiration* (4) Albritton, Leese, and Staff
For nonmedical graduate students. Lectures on blood, heart, circulation, tissue water, respiration, and acid-base balance. Four hours a week, to be arranged.
- 234 *Advanced Physiology of Nutrition, Metabolism, and Excretion* (2) Leese, Still, Steinman
For nonmedical graduate students. Lectures on nutrition, digestion, metabolism, excretion, and temperature regulation. Two hours a week, to be arranged.
- 236 *Advanced Physiology of the Endocrine Glands and Reproduction* (1) Albritton, Still, and Staff
For nonmedical graduate students. Lectures on ductless glands, hormones, humoral agents, and reproduction. One hour a week, to be arranged.
- 238 *Advanced Physiology of the Neuro-Muscular System* (2) Leese
For nonmedical graduate students. Lectures on sensory reception, central nervous processes, somatic and visceral motor activity, and the behavior of smooth and striped muscle. Two hours a week, to be arranged.
- 240 *Advanced Experimental Physiology* (3) The Staff
For nonmedical graduate students. Laboratory work only. Correlated with the lectures in courses 231-238. Material fee, \$36. Nine hours a week, to be arranged.
- 295-96 *Research* (arr.) Albritton, Leese, and Staff
Material fee, \$12 a credit hour. Time and credits to be arranged.
- 299-300 *Thesis* (3-3) Albritton, Leese

POLITICAL SCIENCE

Warren Reed West, Ph.D., *Professor of Political Science*
 John Withrow Brewer, Ph.D., *Professor of International Law, Executive Officer*
 Arlin Rex Johnson, Ph.D., *Professor of Public Administration*
 Karl Ernest Stromsem, Ph.D., *Professorial Lecturer on Public Administration*
 Fred Latimer Hadsel, Ph.D., *Professorial Lecturer in Political Science*
 Harvey Porter Hall, A.M., *Professorial Lecturer in Political Science*
 Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Associate Professor of Political Science*
 Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*
 William George Torpey, Ph.D., *Lecturer on Public Administration*
 Floyd Millard Riddick, Ph.D., *Lecturer in Political Science*
 John Samuel Myers, Ph.D., *Lecturer on Public Administration*
 Harold Seidman, Ph.D., *Lecturer on Public Administration*
 Milton Jacob Esman, Ph.D., *Lecturer in Political Science*
 Richard Allen Fuller, Ph.D., *Lecturer in Political Science*
 Robert Amendt Kinney, A.B., *Lecturer in Political Science*
 Charles Henry Duff, B.S., LL.B., *Lecturer in Political Science*
 Joseph Patrick Murphy, A.B., LL.B., LL.M., *Lecturer in Political Science*

Bachelor of Arts with a major in Political Science (Columbia College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College stated on page 62, including Political Science 9-10.

Required: in addition to the general requirements stated on pages 77-82, thirty credit hours from the following groups distributed as follows: twelve hours from Group A; six hours from Group B; six hours from Group A, B, or C; six hours from Group A, B, C, or D.

Group A: Political Science 111, 112, 117-18, 121-22. Group B: Political Science, 171, 172, 181-82. Group C: Political Science 104, 120, 124, 141, 145, 146, 151-52, 161-62, 175, 176, 191, 194. Group D: Political Science 127, 128, 129, 130.

Students interested in preparing for graduate work in Public Administration will consult the Executive Officer of the Department for modifications of the above requirements.

Bachelor of Arts with a major in Latin American Civilization (Columbia College—Field-of-Study).—See the Department of History, page 274.

Master of Arts in the field of Political Science (Columbia College).—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The thirty hours of required work must be approved in advance by the Adviser.

Doctor of Philosophy (Graduate Council).—See page 92.
Bachelor of Arts and Master of Arts in Government in the field of Foreign Affairs, and Master of Arts in Public Administration with majors in General Administration and in Governmental Fiscal Administration (School of Government).—See pages 170-71, 176-77, 178-79.

FIRST GROUP

- 9-10 *Government of the United States** (3-3) The Staff
 Political Science 9: fundamental principles of political science. The structure, powers, and operation of the Federal Government. Congress, the President, and the Supreme Court. Political Science 10: analysis of the structure, powers, and operation of state and local governments. Political parties, pressure groups, and civil rights. Major functions of governments at federal, state, and local levels. Morning and evening sections. (Also offered 1954 summer term.)
 Political Science 9x, same as 9, offered spring term. Morning.
 Political Science 10x, same as 10, offered fall term. Morning.

SECOND GROUP*

- 104 *State and Local Government* (3) Esman
 State, municipal, and other local governmental forms, operations, and problems are studied with attention to policy formulation and administration, and to the forces of practical politics. Not open to students who have credit for former Political Science 115. 1954-55 and alternate years. Evening.
- 111 *Introduction to Comparative Government* (3) Kraus
 The government and politics of the principal constitutional democracies of Western Europe, with special attention to Great Britain and France. Morning.
- 112 *Introduction to Comparative Government* (3) Kraus
 The government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. Morning.
- 113 *Political Problems of the British Commonwealth of Nations* (3) Kraus
 A discussion of the transformation of the Colonial Empire into the modern Commonwealth, questions of equal partnership, and governments and policies in the principal dominions. Summer term 1954.
- 117-18 *Political Theory: the Growth of Political Thought in the West* (3-3) Kraus
 Political Science 117: from Classical Antiquity to the Middle Ages. Political Science 118: from the Renaissance and Reformation to recent times. Evening. (Also offered 1954 summer term—Political Science 117 (3).)
- 120 *Foundations of American Democracy* (3) Brewer
 An introduction to political thought in the United States, from colonial times to the end of the Civil War period. 1954-55 and alternate years. Morning.
- 121-22 *The Constitution of the United States* (3-3) West
 The judicial power of the federal courts in constitutional interpretation. Political Science 121: emphasis is placed on the separation of powers.

* Political Science 9-10 is prerequisite to all second-group courses.

- federal-state relationships, and taxation. Political Science 122: emphasis is placed on federal power over interstate commerce and on the constitutional protection of civil rights. Evening. (Also offered 1954 summer term—Political Science 121 (3).)
- 124 *Legislative Organization* (3) Riddick
A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation are examined. (Not offered in 1954-55.)
- 127 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Duff, Murphy
Afternoon and evening sections. (Also offered 1954 summer term.)
- 128 *Commercial Law: Negotiable Instruments, Property, Sales, Mortgages* (3) Duff, Murphy
Afternoon and evening sections.
- 129 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3) Murphy
Evening.
- 130 *Maritime Law* (3)
(Not offered in 1954-55.)
- 141 *The Development of Legal Institutions* (3) Brewer
An introduction to historical jurisprudence, with primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Not offered in 1954-55.)
- 145 *Political Parties and Politics* (3) Ludden
Survey and analysis of organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. Not open to students who have credit for former Political Science 116. Morning.
- 146 *Political Pressures and Public Reactions* (3) Ludden
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. 1954-55 and alternate years. Morning. (Also offered 1954 summer term.)
- 151-52 *Public Administration* (3-3) Esman
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and non-governmental organizations and interests. Evening.
- 161-62 *Administrative Law* (3-3) Murphy
A survey of the relationships between administrative and judicial power, with consideration of problems of separation of powers, delegation of power, and administrative power over private rights. (Political Science 161 not offered in 1954-55.) Political Science 162, evening.

- 171 *International Politics* (3) Ludden
Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation. Morning and evening sections. (Also offered 1954 summer term.)
- 172 *International Organization: the United Nations* (3) Ludden
Introductory study and analysis of the development and current operation of international organization within the system of sovereign states, with emphasis on the United Nations and other existing international and regional organizations. Morning and evening sections.
- 175x *International Politics in the Western Hemisphere* (3) Davis
Political relations of the American Republics in the nineteenth and twentieth centuries, the development of Pan Americanism and the Organization of American States. Morning.
- 176x *Recent Trends in Latin American Politics and Government* (3) Davis
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. Morning.
- 181-82 *International Law* (3-3) Brewer
General survey of the public law of nations with particular emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second term. Morning and evening sections.
- 191 *Government and Politics in the Middle East* (3) Hall
International relations and governmental problems of the Arab world and adjacent areas. Evening.
- 194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3) Kinney
Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region. Evening.
- THIRD GROUP
- 209-10 *Seminar: the Federal Government of the United States* (3-3) West
Advanced research emphasizing the legislative problems of Congress and the relations of Congress with the Administration. Evening.
- 212 *Seminar: Comparative Government* (3) Kraus
Selected topics and problems in the field of comparative political and administrative institutions and in the politics of modern constitutional governments and dictatorships. Evening.
- 213 *Readings in Comparative Government* (3) Kraus
Readings and group discussions in the field of comparative political and administrative institutions, with particular attention to such topics

- as legislatures, executive departments, bureaucracy, political parties, etc. Evening. (Also offered 1954 summer term.)
- 217 *Seminar: Topics in Political Theory* (3) Kraus
Research and discussion primarily concerned with problems of modern political and constitutional theory, including the theoretical aspects of representative government, democracy, socialism, and totalitarianism. Evening.
- 220 *Reading Course in Political Theory* (3) Kraus
Readings and group discussions, principally in the field of modern political and constitutional theory since the seventeenth century. Evening.
- *226 *Problems of Governmental Reorganization* Torpey
(3)
Intensive consideration of the Hoover Commission reports and related documents, and their implications; obstacles and aids to reorganization movements. (Not offered in 1954-55.)
- *239-40 *Principles and Problems of Personnel Administration* (3-3) Torpey
Principles and functions of personnel administration; formal and informal organization for personnel management; staff relationships; evaluation of processes, procedures, and problems of personnel administration. Evening.
- *241 *Human Relations in Administration* (3) Torpey
Application of scientific principles to human relations in work situations; problems of communication, organization, etc. Evening.
- *251-52 *Budget Formulation and Execution* (3-3) Myers
Principles of federal budget formulation, problems and practices in the administration and execution of the budget at agency levels, processes of budgetary evaluation, performance budgeting and related activities. Evening.
- *253 *Staff Functions in Government Administration* Myers
(3)
Analysis of the nature of staff functions; program planning and non-fiscal control; legal aspects of programs and administrative management, fiscal management, and personnel management; integration aspects, etc. 1955-56 and alternate years.
- *255 *Administrative and Organization Theories and Problems* (3)
Theories and principles of administration, analysis of problems in administration and agency organization, problems of coordination, special forms of government organization, executive-legislative and federal-state relationships. Evening.

- *257 *Public Policy Formulation and Administration* Johnson
(3)
Planning activities of public agencies in their development of organizational and operating programs and policies, agency policy relationships with the Congress, cases illustrating the planning process in the determination of substantive programs at various levels.
Summer term 1954.
- *258 *Public Relations in Government Administration* Stromsem
(3)
The philosophy, techniques, and devices utilized by various public administrative agencies in the development and administration of public programs at various levels; an evaluation of various public relations programs. Evening.
- *260 *Administration of Major Governmental Programs* (3)
Analysis of programs of various government agencies, legislative background and organization structure, relationships between headquarters and the field, relationships between top management and subordinate agencies, external relationships. (Not offered in 1954-55.)
- *262 *Reading and Conference Course in Public Administration* Torpey
(3)
Readings and conferences to provide familiarity with selected literature in the field of Public Administration. (Not offered in 1954-55.)
- *263-64 *Analysis of the Administrative Process* Stromsem
(3-3)
Open only to persons selected by governmental agencies for their intern programs. Evening.
- *265-66 *Workshop in Public Administration* (3-3) Johnson
Required of all Master of Arts candidates in Public Administration. Training in conference methods and in methods of investigation and oral and written presentation. Students apply to questions of public policy and practice the knowledge which they have acquired in course work and in individual reading, experience, or research. Evening.
(Also offered 1954 summer term—Political Science 265 (3).)
- *268 *Government Corporations* (3) Seidman
Place of the government corporation as an administrative unit; analysis of corporate purposes, organization, legal status, controls, revenue sources, etc.; relationship to the legislative branch, administrative departments, and the public. Evening.
- 271-72 *Problems in International Politics and Organization* Hadsel
(3-3)
A seminar designed to develop techniques of research in recent international affairs, and to examine major developments in international politics and organizations, such as the United Nations and specialized agencies. Evening. (Also offered 1954 summer term—Political Science 271 (3).)

* Primarily for majors in the School of Government.

- 274 *Methods and Objectives of Foreign Policy* (3) Hadsel
Systematic examination of the objectives of foreign policies of the major powers, with particular attention to the political, propaganda, economic, and military methods used to pursue these objectives. Evening.
- 277 *Seminar: Latin American Government* (3) Davis
Investigation and analysis of the political structures of selected Latin American republics. Two comparable governments will be studied each year. Evening.
- 278 *Seminar: Latin American Political Philosophy* (3) Davis
Research in political personalities and philosophies of 19th and 20th century Latin America. Evening.
- 279-80 *Reading Course in International Affairs* (3-3) Hadsel
Directed reading and discussion of basic materials designed to stimulate mature investigation of particular problems in the nature and development of international law and politics; the growth and operation of international organizations. Political Science 279, evening. (Political Science 280 not offered in 1954-55.)
- 281-82 *Seminar: International Law and Relations* Brewer
(3-3)
Research topics in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. Political Science 281, evening. (Political Science 282 not offered in 1954-55.)
- 293-94 *Seminar: International Politics and Government in the Pacific Area* (3-3) Kinney
Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East. Evening.
- 299-300 *Thesis* (3-3) The Staff
Time to be arranged. (Also offered 1954 summer term.)

PSYCHIATRY

Winfred Overholser, A.B., M.D., Sc.D., *Professor of Psychiatry, Executive Officer*

Solomon Katzenelbogen, M.D., *Clinical Professor of Psychiatry*

Addison McGuire Duval, M.D., *Clinical Professor of Psychiatry*

Leon Yochelson, A.B., M.D., *Associate Clinical Professor of Psychiatry*

Sidney Berman, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Morris Kleinermann, Ch.D., M.B., *Assistant Clinical Professor of Psychiatry*

Henry Prather Laughlin, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Marshall de Graffenried Ruffin, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Anna Coyne Todd, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Jay Louis Hoffman, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Elmer Klein, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Norman Taub, B.S., M.D., *Associate in Psychiatry*

Harold Corson, M.D., *Associate in Psychiatry*

Anna Genevieve McEldowney, A.B., M.D., *Associate in Psychiatry*

Sarah Shtoffler Tenenblatt, A.B., M.D., *Associate in Psychiatry*

David Eden, A.B., M.D., *Clinical Instructor in Psychiatry*

Clarence Bunge, B.S., M.D., *Clinical Instructor in Psychiatry*

Robert Milton Greenberg, A.B., M.D., *Clinical Instructor in Psychiatry*

Helen Pallister, Ph.D., *Clinical Psychologist*

Doctor of Philosophy (Graduate Council).—See page 92.

165 *Dynamics of Personality Development* Berman

An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships. One hour a week.

178 *Psychopathology* Hoffman

Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material. One hour a week.

266 *Psychiatry* Overholser

History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole. One hour a week.

- 268 *Demonstration Clinics* Cushard
Presentation of clinical cases of major mental illnesses and primary behavior disturbances, correlating with Psychiatry 266. Each student examines patients under supervision. Three hours a week. St. Elizabeths Hospital.
- 271 *Psychosomatic Aspects of General Medicine* Katzenelbogen
Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders. One hour a week.
- 324 *Psychoneurosis* Laughlin
Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. One hour a week. Medical Conference Room, D. C. General Hospital.
- 431-32 *Clinical Clerkship* Duval, Kleinerman, Yochelson, Ruffin, Taub, Corson, Pallister, Eden, Bunge, Greenberg
Supervised examination, diagnosis, and treatment of ambulatory borderline cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. Three weeks divided service. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital.

PSYCHOLOGY

Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
 Thelma Hunt, Ph.D., M.D., *Professor of Psychology, Executive Officer*
 Henry Furness Hubbard, Ph.D., *Professorial Lecturer in Psychology*
 Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
 Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
 Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
 James Norman Mosel, A.M., *Associate Professor of Psychology*
 Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
 Margaret Ives, Ph.D., *Lecturer in Psychology*
 Eva Mayne Johnson, A.M., *Instructor in Psychology*

Bachelor of Arts with a major in Psychology (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62, including Psychology 1 and 2 or 22; Statistics 53.

The general requirements for the degree are stated on pages 77-82. The sixty required credit hours must include twenty-four hours in Psychology above 2 or 22, including Psychology 29 or 151, 98, 131, 191, and 196; and Physiology 115 or Psychology 118.

Master of Arts or Master of Science in the field of Psychology (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 83-86. Of the twenty-four required credit hours (exclusive of the thesis), a minimum of eighteen must be in third-group courses; a minimum of twelve must be in psychology, including Psychology 201 and 202; twelve may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) counseling and guidance, (3) clinical-abnormal, (4) social, (5) personnel, (6) experimental, and (7) personality. For detailed requirements consult the Executive Officer of the Department.

Doctor of Philosophy (Graduate Council).—See page 92.
Bachelor of Arts in Government with a major in Business Administration (Personnel Management option) (School of Government).—See page 172.

Master of Arts in Personnel Administration or Master of Arts in Government with a specialty in Counseling, Psychometrics, or International Communication (School of Government).—See pages 179-80, 176-77, 177-78.

Master of Arts in Education in the fields of Employee Training and of Guidance (School of Education).—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. The requirements for the degree are stated on pages 159-62.

FIRST GROUP

1 General Psychology* (3)

The Staff
 The fundamental principles underlying human behavior. Morning and evening sections. (Also offered 1954 summer term.)

* Psychology 1 is prerequisite to all other courses in Psychology.

- Psychology 1x, same as 1, offered spring term. Morning and evening sections.
- 2 *Applied Psychology* (3) The Staff
The applications of psychology in business, industry, medicine, law, guidance, education, and social problems. Morning and evening sections.
- Psychology 2x, same as 2, offered fall term. Morning and evening sections.
- 22 *Introduction to Educational Psychology* (3) Faith
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. Morning.
- Psychology 22x, same as 22, offered fall term. Evening.
- 29 *Child Psychology* (3) Johnson
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. Evening. (Also offered 1954 summer term.)
- Psychology 29x, same as 29, offered spring term. Morning.
- 98 *Abnormal Psychology* (3) Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. Morning. (Also offered 1954 summer term.)
- Psychology 98x, same as 98, offered fall term. Morning and evening sections.

SECOND GROUP *

- 118 *Physiological Psychology* (3) Fox
Structure, function, and phylogeny of receptors, nervous system, and effectors as mediators of behavior, including drives, learning, and emotions. Morning.
- 121 *Educational Psychology* (3) Faith
Advanced course in educational psychology. Open each term on the individual study plan to a limited number of students. Time to be arranged.
- 129 *Introduction to Counseling and Guidance* (3) Dreese
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. Evening. (Also offered 1954 summer term.)
- 131 *Psychological Tests* (3) Johnson
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$5. Morning. (Also offered 1954 summer term.)
- Psychology 131x, same as 131, offered spring term. Evening.

* Six credits in first group courses are prerequisite to all second group courses.

- 144 *Personnel Psychology* (3) Hubbard, Mosél
The applications of psychology to personnel work in education, business, industry, and government. Evening.
Psychology 144x, same as 144, offered fall term. Evening.
- 146 *Psychology of Human Relations* (3) Mosél
The psychological basis for understanding and improving personal and group relations. Consideration of case studies from a wide variety of life situations. Morning. (Also offered 1954 summer term.)
Psychology 146x, same as 146, offered fall term. Evening.
- 148 *Psychology of Advertising and Market Research* (3) Mosél
The motivational and social dynamics of consumer behavior. Evaluation of the psychological effectiveness of products, media, and advertising and public relations programs. Consideration of current techniques and findings in motivational research. 1955-56 and alternate years.
- 151 *Social Psychology* (3) Tuthill
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological bases of race prejudice, nationalism, and war. Morning. (Also offered 1954 summer term.)
Psychology 151x, same as 151, offered spring term. Evening.
- 156 *Psychology of Propaganda and Public Opinion* (3) Tuthill
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity to propaganda, psychological warfare. Evening. (Also offered 1954 summer term.)
- 161 *Comparative Psychology* (3) Caldwell
A survey of psychological processes in infrahuman organisms, with special emphasis on the evolution of animal behavior from the lowest forms to man. Accompanied by laboratory work. Material fee, \$9. Afternoon.
- 171 *Psychology of Personality* (3) Caldwell
Contemporary approaches to the study of personality. Prerequisite: 12 credits in psychology, including Abnormal Psychology. Morning.
- 191 *Experimental Psychology* (3) Tuthill
The application of experimental methods to various psychological problems. Prerequisite: 12 credits in psychology and an elementary course in statistics. Material fee, \$9. Afternoon.
Psychology 191x, same as 191, offered spring term. Lecture, evening; laboratory, afternoon and evening sections.
- 192 *Problems in Experimental Psychology* (3) Caldwell, Fox
Opportunity for work on individual experimental projects. Prerequisite: Psychology 161 or 191. Open each term to a small number of students by permission of the instructor. Time to be arranged.

- 193-94 *Readings in Psychology* (3-3) The Staff
Supervised readings on specific topics in psychology; with conferences; for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality point index of 3.00 or higher. Special permission of staff member under whom course is to be taken is necessary. Time to be arranged. (Also offered 1954 summer term—Psychology 193 (3).)
- 196 *History and Systems of Psychology* (3) Caldwell
A survey of the contemporary schools of psychology. Prerequisite: 12 credits in psychology. Evening.

THIRD GROUP *

- 201 *Seminar: Advanced General Psychology* (3) Johnson
General review of the field for graduate students with an intensive study of selected problems. Required in all graduate programs. Afternoon.
Psychology 201x, same as 201, offered spring term. Evening.
- 202 *Psychological Research Methods and Procedures* (3) Fox
Required of all Master of Arts candidates in Psychology. Prerequisite: Experimental Psychology and statistics. Afternoon.
Psychology 202x, same as 202, offered fall term. Evening.
- 205-6 *Field Work in Psychology* (3-3) The Staff
Supervised field work in agencies providing psychological service. Admission by permission of the Executive Officer of the Department. Time to be arranged. (Also offered 1954 summer term—Psychology 205 (3).)
- 207-8 *Readings in Psychology for Graduate Students* (3-3) The Staff
Supervised readings with conferences on specified topics in psychology. Time to be arranged. (Also offered 1954 summer term—Psychology 207 (3).)
- 209x *Seminar: Psychology of Motivation* (3) Tuthill
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach. Evening.
- 212 *Seminar: Personality Evaluation by Projective Techniques* (3) Ives
1955-56 and alternate years.
- 213x *Seminar: Clinical Psychology* (3) Ives
A study of the clinical applications of non-projective tests. Evening.

* Open only to graduate students with 18 or more credits in psychology, except by special permission of Instructor and Executive Officer of the Department.

- 215 *Seminar: Advanced Study of Projective Techniques* (3) Ives
Primary emphasis upon the Rorschach Test. Prerequisite: Psychology 212. Evening.
- 220 *Seminar: Abnormal Psychology* (3) Hunt
An intensive study of a selected problem in the field of abnormal psychology. Evening.
- 223 *Seminar: Learning* (3) Fox
Covers theories of learning. Evening.
- 225 *Seminar: Mental Hygiene* (3) Hunt
A study of mental health problems with special attention to programs of prevention. Evening. (Also offered 1954 summer term.)
- 226 *Seminar: Clinical Psychology of Childhood* (3) Hunt
A survey of children's behavior and personality disorders. Special emphasis is placed on therapy and the techniques of interviewing and testing children. Evening.
- 227x *Seminar: Counseling and Guidance* (3) Dreese
Recent developments and current problems in vocational, educational, and personal guidance in various types of agencies with particular reference to education. Prerequisite: educational or psychological measurements and Psychology 129 or the equivalent. Evening.
- 228 *Seminar: Techniques of Counseling* (3) Dreese
Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods. Evening.
- 229x *Seminar: Occupational and Educational Information* (3) Faith
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. Evening.
- 231 *Test Construction* (3) Hunt
The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and a course in statistics. Evening.
- 232 *Research: Test Construction* (3) Johnson
Individual projects in construction and evaluation of psychological, educational, or vocational tests. Prerequisite: Psychology 231. Open each term on individual study plan to a small number of students by permission of instructor. Time to be arranged.
- 233 *Individual Psychological Testing* (3) Johnson
Instruction and practice in giving of the Binet Test and the Wechsler-Bellevue Test. Emphasis is placed on testing children and adolescents.

- Prerequisite: an elementary course in tests and measurements. Material fee, \$5. Afternoon.
- Psychology 233x, same as 233, offered spring term. Afternoon.
- 234 *Seminar: Test Theory (3)* Mosé
Evening.
- 236x *Seminar: Analysis of the Individual for Purposes of Counseling (3)* Faith
A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: an introductory course in educational or psychological measurements. Evening.
- 244 *Seminar: Job Analysis and Evaluation (3)* Mosé
1955-56 and alternate years.
- 245x *Seminar: Employee Motivation and Morale (3)* Mosé
Application of the principles of primary group functioning and group-centered administration to the problem of motivating employees, building morale, and strengthening human relations. Emphasis is upon use of group dynamics in supervision and leadership. Evening.
(Also offered 1954 summer term.)
- 246x *Seminar: Personnel Measurement Techniques (3)* Mosé
Detailed consideration of interviews, personal data analysis, tests, ratings and questionnaires in evaluating employability, job proficiency and worker morale. Evening.
- 251 *Seminar: Advanced Social Psychology (3)* Tuthill
Current research and theory in social psychology; group dynamics, ego-involvements, action research, and social interaction theory. Evening.
- 254 *Seminar: Group Dynamics (3)* Tuthill
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes. 1955-56 and alternate years.
- 255 *Seminar: Techniques of Opinion and Attitude Measurement (3)* Tuthill
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc. 1955-56 and alternate years.
- 261 *Seminar: International Communication (3)* Mosé
Techniques and principles of tactical and strategic psychological operations; psychological and ethnological foundations of international behavior and communication; the psychological effects of physical weapon systems. Evening.
- 272x *Seminar: Theories of Personality (3)* Caldwell
A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study. Evening.

295-96 *Research in Psychology* (arr.)

The Staff

Individual research by student, carried out under supervision of staff member. Time and credits to be arranged. (Also offered 1954 summer term—Psychology 295 (arr.).)

299-300 *Thesis* (3-3)

The Staff

Time to be arranged. (Also offered 1954 summer term—Psychology 299 (3).)

RADIOLOGY

William Woodrow Stanbro, M.D., *Professor of Radiology, Executive Officer*
 Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*
 Ludwig Carl Kroutil, A.B., M.D., *Assistant Clinical Professor of Radiology*
 Charlotte Patricia Donlan, A.B., M.D., *Assistant Clinical Professor of Radiology*
 Alvin Charles Wyman, A.B., M.D., *Associate in Radiology*
 George Tievsky, M.D., *Clinical Instructor in Radiology*
 Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*

115-16 *Anatomy*

Correlation of gross and Roentgen anatomy.

The Staff

220 *Principles of Radiology*

Lectures and discussions.

The Staff

313 *Advanced Radiological Diagnosis*

Lectures and discussions.

The Staff

421-22 *Clinical Studies*

Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

The Staff

RELIGION

Joseph Richard Sizoo, A.M., S.T.D., D.D., Litt.D., *Milbank Professor of Religion*

Lawrence Daniel Folkemer, Ph.D., *Professorial Lecturer in Religion*

Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion, Executive Officer*

Bachelor of Arts with a major in Religion (Columbia College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62, including Religion 9, 10, and 59-60.

Required: the general requirements as stated on pages 77-82, including a minimum of eighteen credit hours in religion beyond first-group courses.

FIRST GROUP

9 *The Old Testament* (3) Sizoo

A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities. Morning.

10 *The New Testament* (3) Sizoo

A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. Morning. (Also offered 1954 summer term.)

59-60 *History of Religion* (3-3) Folkemer, Olmstead

Full term: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. Spring term: Judaism, Christianity, and Islam; analysis of their origin, evolution, and contemporary status. Morning and evening sections. (Also offered 1954 summer term—Religion 59 (3).)

SECOND GROUP

103 *The Prophets, Their Times and Their Message* (3) Sizoo

The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study. (Offered in 1955-56.)

105 *The Life and Thought of Jesus* (3) Sizoo

A comprehensive study of the life and teachings of Jesus as they relate to problems of belief, standards of value, and patterns of life; the significance of the message of Jesus for our own times. Morning.

- Olmstead
- 121 *Basic Problems of Western Religious Thought* (3)
The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history. Morning.
- Olmstead
- 124 *Christian Ethics and Modern Society* (3)
A study of the nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. Morning.
- Olmstead
- 131 *History of Christianity to the Reformation* (3)
The rise and expansion of Christianity; the development of Christian thought; the evolution of church organization and worship; the Renaissance and pre-Reformation dissent. (Offered in 1955-56.)
- Olmstead
- 132 *History of the Christian Church Since the Reformation* (3)
The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Offered in 1955-56.)
- Olmstead
- 172 *Religion in American Culture* (3)
Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, religion and literature, revivalism and education, science and religious thought, divisions and cooperative movements in religion. (Not offered in 1954-55.)
- Olmstead
- 185 *Classics of Religious Literature* (3)
A careful study of some of the world's treasures of religious literature from the standpoint of religious message, literary form, and permanent influence. Readings from *Bhagavadgita*; *The Bible*; *The Koran*; *City of God*; Augustine; *Imitation of Christ*; *A Kempis*; *Praise of Folly*; Erasmus; *Pilgrims Progress*; Bunyan; *Christian Liberty*, Luther, etc. (Not offered in 1954-55.)
- Olmstead
- 197-98 *Undergraduate Seminar in Religion* (3-3)
Selected personalities and problems in the history of Christian thought. Admission by permission of the instructor. Time to be arranged.

ROMANCE LANGUAGES AND LITERATURES

Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*

Merle Irving Protzman, Ph.D., *Professor of Romance Languages*

Louis Clark Keating, Ph.D., *Professor of Romance Languages, Executive Officer*

Alan Thomas Deibert, A.M., *Professor of Romance Languages*

*Antonio Alonso, A.M., *Associate Professor of Spanish*

Rafael Supervia, Doctor en Derecho, *Associate Professor of Spanish*

James Willis Robb, A.M., *Assistant Professor of Romance Languages*

William Graham Clubb, A.M., *Assistant Professor of French*

Alberto Vázquez, Ph.D., *Lecturer on Spanish American Literature*

Joseph Louis Metivier, Jr., A.B., *Instructor in Romance Languages*

Bachelor of Arts with majors in (1) French Literature, (2) Spanish American Literature, and (3) Spanish Literature (Columbian College—Field-of-Study).—

Prerequisite: the Arts and Letters curriculum in the Junior College.

Required: the general requirements as stated on pages 77-82 and the grade "pass" on the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers; and their works. A reasonable proficiency in the spoken language is required. Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is required for graduate work in most institutions. The Department of Romance Languages provides a proseminar in each of the major fields intended to assist the student in his preparation for the major examination.

Master of Arts (1) French Literature, (2) Spanish American Literature, and (3) Spanish Literature (Columbian College).—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The thirty hours of required work must include a thesis, for which six hours credit are allotted. The remainder of the program is arranged in consultation with the student's major adviser.

Doctor of Philosophy (Graduate Council).—See page 91.

Bachelor of Arts in Education with teaching fields in French and in Spanish (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the French option, page 155 or the Spanish option, page 158; the professional courses listed on pages 158-59.

FRENCH

FIRST GROUP

†1-2 First-year French (3-3)

The Staff
For beginners. Grammar, composition, drill in pronunciation, translation of modern French prose. Morning and evening sections. (Also offered 1954 summer term.)

* On sabbatical leave spring term 1954-55.

French 1x, same as 1, offered spring term. Morning and evening sections.

French 2x, same as 2, offered fall term. Morning and evening sections.

†3-4 *Second-year French** (3-3)

The Staff

Advanced grammar and composition, reading in modern French prose, oral practice, introduction to French civilization. Prerequisite: French 1-2 or two years of high school French. Morning, afternoon, and evening sections. (Also offered 1954 summer term.)

French 3x, same as 3, offered spring term. Morning and evening sections.

French 4x, same as 4, offered fall term. Morning and evening sections.

9-10 *French Conversation and Composition* (3-3)

The Staff

Morning and evening sections.

49 *French Readings for Non-major Students* (3)

Clubb

Designed primarily for graduate students preparing for reading examinations. Undergraduates are admitted with the permission of the instructor. No academic credit for graduate students. Evening.

French 49x, same as 49, offered spring term. Evening.

51-52 *Survey of French Literature and Civilization** (3-3)

Deibert

Evening.

SECOND GROUP*

119-20 *French Literature of the Sixteenth Century* (3-3)

Keating

Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pleiade, etc. Class analysis of texts, collateral reading. Recommended: History 120. 1955-56 and alternate years.

121-22 *French Literature of the Seventeenth Century* (3-3)

Protzman

History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral reading. 1954-55 and alternate years. Evening.

123-24 *French Literature of the Eighteenth Century* (3-3)

Deibert

History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history. 1955-56 and alternate years.

* French 1-4 is required and French 51-52 is recommended as prerequisite to all second-group courses in French.

- 125-26 *French Literature of the Nineteenth Century* (3-3) Keating
 Romanticism and realism; fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. 1954-55 and alternate years. Morning.
- 127-28 *French Literature of the Twentieth Century* (3-3) Keating
 Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. 1955-56 and alternate years.
- 199-200 *Proseminar: Readings for the Major in French Literature* (3-3) Protzman
 Conferences and group discussions. Time to be arranged.

THIRD GROUP

- 227-28 *Seminar in Modern French Literature* (3-3) Keating
 Prerequisite: a second-group course in French literature. 1954-55 and alternate years. Afternoon.
- 229-30 *Seminar in Classical French Literature* (3-3) Protzman
 Prerequisite: a second-group course in French literature. 1955-56 and alternate years.
- †249-50 *Old French** (3-3) Doyle
 Phonology and morphology of Old French, with an outline of its development through Vulgar Latin; survey of French literature to the end of the thirteenth century. Prerequisite: a second-group course in French literature; an elementary knowledge of Latin. Time to be arranged.
- †251-52 *Middle French** (3-3) Doyle
 French literature of the fourteenth and fifteenth centuries. Class analysis of texts; collateral reading. Prerequisite: a second-group course in French literature. Knowledge of Old French desirable. Time to be arranged.
- 299-300 *Thesis* (3-3) The Staff

PORTUGUESE

FIRST GROUP

- †1-2 *First-year Portuguese* (3-3)
 For beginners. Grammar, composition, drill in pronunciation, translation of modern Portuguese prose. (Not offered in 1954-55.)
- †3-4 *Second-year Portuguese* (3-3)
 Advanced grammar and composition, reading of modern Portuguese prose, oral practice, introduction to Portuguese and Brazilian civilization.

* Only one of the following courses: French 249-50, French 251-52, and Spanish 249-50 will be given in 1954-55, depending on demand.

tion. Prerequisite: Portuguese 1-2 or the equivalent. (Not offered in 1954-55.)

SECOND GROUP

- 127-28 *Portuguese and Brazilian Literature* (2-2)
Evolution of the Portuguese language; outline of the literature of Portugal (fall term) and Brazil (spring term). Lectures, readings, written reports. Conducted in Portuguese. Prerequisite: Portuguese 3-4 or the equivalent. (Not offered in 1954-55.)

SPANISH

FIRST GROUP

- †1-2 *First-year Spanish* (3-3) The Staff
For beginners. Grammar, composition, drill in pronunciation, translation of modern Spanish prose. Morning and evening sections. (Also offered 1954 summer term.)

Spanish 1x, same as 1, offered spring term. Morning and evening sections.

Spanish 2x, same as 2, offered fall term. Morning and evening sections.

- †3-4 *Second-year Spanish** (3-3) The Staff
Advanced grammar and composition, reading of modern Spanish prose, oral practice, introduction to Hispanic civilization. Prerequisite: Spanish 1-2 or two years of high school Spanish. Morning and evening sections. (Also offered 1954 summer term.)

Spanish 3x, same as 3, offered spring term. Morning and evening sections.

Spanish 4x, same as 4, offered fall term. Morning and evening sections.

- 9-10 *Spanish Conversation and Composition* (3-3) Alonso and Staff

Morning and evening sections.

- 51-52 *Survey of Spanish Literature and Civilization** (3-3) Supervía

The social, artistic, and cultural background of Spanish civilization. Lectures, recitations, and informal discussion. Morning.

SECOND GROUP*

- 121-22 *Spanish Literature of the Golden Age* (3-3) Doyle

Cervantes, Lope de Vega, Calderón; the classic drama, fiction, the ballad, lyric poetry. Class analysis of texts, collateral reading, lectures on literature and history. 1954-55 and alternate years. Morning.

- †123-24 *Cervantes* (3-3) Doyle

Life and works of Cervantes. The Quixote, the Novelas Ejemplares, and other works. 1955-56 and alternate years.

* Spanish 1-4 is required and Spanish 51-52 is recommended as prerequisite to all second group courses in Spanish.

- 125-26 *Modern Spanish Literature* (3-3) Alonso, —
Prose and poetry of the eighteenth and nineteenth centuries. Class analysis of texts, collateral reading, lectures on literature and history. 1954-55 and alternate years, evening. 1955-56 and alternate years, morning.
- 127-28 *Contemporary Spanish Literature* (3-3) Supervía
Prose and poetry of the latter part of the nineteenth and of the twentieth centuries. Class analysis of texts, collateral reading, lectures on literature and history. 1955-56 and alternate years.
- 151-52 *The Spanish American Novel* (3-3) Vázquez
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. Evening.
- 155-56 *Spanish American Literature to 1880* (3-3) Vázquez
The literature of Spanish America from the colonial period to the latter part of the nineteenth century. Lectures, collateral reading, reports, and class analysis of important works. (Not offered in 1954-55.)
- 157-58 *Spanish American Literature Since 1880* (3-3) Vázquez
The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. 1955-56 and alternate years.
- 197-98 *Proseminar: Readings for the Major in Spanish American Literature* (3-3) Vázquez
Conferences and group discussions. Time to be arranged.
- 199-200 *Proseminar: Readings for the Major in Spanish Literature* (3-3) Alonso, —
Conferences and group discussions. Time to be arranged.

THIRD GROUP

- 225-26 *Seminar in Spanish Literature* (3-3) Alonso, —
Prerequisite: a second-group course in Spanish literature. 1954-55 and alternate years. Time to be arranged.
- 227-28 *Seminar in Spanish American Literature* (3-3) Vázquez
Prerequisite: a second-group course in Spanish American literature. (Not offered in 1954-55.)
- *249-50 *Old Spanish** (3-3) Doyle
Literature and philology: *Poema del Cid*, *Libro de Buen Amor*, *Conde Lucanor*, etc.; Menéndez Pidal's *Manual de gramática histórica española* and Ford's *Old Spanish Readings*. Prerequisite: a second-group course in Spanish literature; an elementary knowledge of Latin. Time to be arranged.
- 299-300 *Thesis* (3-3) The Staff

*Only one of the following courses: French 249-50, French 251-52, and Spanish 249-50 will be given in 1954-55, depending on the demand.

SECRETARIAL STUDIES

Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies, Executive Officer*

Margaret Kiley, A.M., *Associate in Secretarial Studies*

Leona Fehler Dorsey, A.M., *Associate in Secretarial Studies*

Associate in Arts (Junior College—two-year vocational curriculum in Secretarial Studies).—For curriculum, see page 67.

Bachelor of Arts in Education with a teaching field in Business Education (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the Secretarial Studies option, page 153, and the professional courses listed on pages 158–59.

FIRST GROUP

1 Elementary Typewriting (3)

Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, \$6. Afternoon and evening sections. Secretarial Studies 1x, same as 1, offered spring term. Evening. Shott and Staff

2 Intermediate Typewriting (3)

The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, \$6. Afternoon and evening sections. Secretarial Studies 2x, same as 2, offered fall term. Evening. Shott and Staff

11 Elementary Shorthand and Transcription (3)

A study of the principles of Gregg shorthand correlated with dictation and transcription. Minimum dictation speed of 60 words a minute attained. Laboratory fee, \$2. Morning and evening sections. Secretarial Studies 11x, same as 11, offered spring term. Evening. Shott and Staff

12 Intermediate Shorthand and Transcription (3)

Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. Minimum dictation speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, \$3. Morning and evening sections. Secretarial Studies 12x same as 12, offered fall term. Evening. Shott

15 Advanced Shorthand, Typewriting, and Transcription (3)

Dictation and transcription involving vocabularies in specific businesses. Minimum speed of 100 words a minute attained in dictation.

Prerequisite: Secretarial Studies 12 or the equivalent. Laboratory fee, \$3. Evening.

16 *Secretarial Shorthand, Typewriting, and
Transcription (3)* Shott

Dictation and transcription involving vocabularies used in the legal and medical professions. Minimum dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent. Laboratory fee, \$3. Evening.

51 *Business Correspondence (3)* Shott

Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature. Evening.

54 *Secretarial Practice (3)* Shott

A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships. Time to be arranged.

SLAVIC LANGUAGES AND LITERATURES

Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian,
Executive Officer*
Peter Zouboff, Ph.D., *Lecturer in Russian*

- 1-2 *First-year Russian (3-3)* Yakobson and Staff
A beginner's course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Morning and evening sections. (Also offered 1954 summer term.)
- 3-4 *Second-year Russian (3-3)* Yakobson and Staff
Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Morning and evening sections.
- 9-10 *Russian Conversation (3-3)* Zouboff
Prerequisite: Russian 1-2, 3-4, and the permission of the instructor. Evening.
- 101-2 *Rapid Readings in Russian (3-3)* Yakobson
Readings and translations of classic and modern literary texts and periodical literature. 1955-56 and alternate years.
- 103-4 *Scientific Russian (3-3)* Yakobson
Reading and translation of technical texts. 1954-55 and alternate years. Evening.

SOCIOLOGY *

Harold Loran Geisert, Ph.D., *Professor of Sociology, Executive Officer*
 Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
 Henry Davidson Sheldon, Ph.D., *Lecturer in Sociology*
 Francis Reddy Grady, M.S., *Lecturer in Sociology*

Bachelor of Arts with a major in Sociology (Columbia College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College. See page 62, including Sociology 1-2.

Required: the general requirements as stated on pages 77-82, including Sociology 172 and 181 and eighteen hours in second or third group courses in Sociology.

Master of Arts in the field of Sociology (Columbia College).—Prerequisites: the degree of Bachelor of Arts with a major in Sociology at this University, or the equivalent.

Required: the requirements for the degree are stated on pages 81-86. The thirty hours of required work must include a minimum of eighteen hours in third-group courses.

FIRST GROUP

1-2 *Introductory Sociology** (3-3)

Lavell, _____

The origin and development of culture, man's social nature, types of groups and institutions, social processes, factors producing social problems, individual and social disorganization. Morning and evening sections. (Also offered 1954 summer term—Sociology 1 (3).)

Sociology 1x, same as 1, offered spring term. Morning.

SECOND GROUP

123 *Fields of Social Work* (3)

Grady

An introduction to the nature and scope of social work, the development of social work programs, functions of social case work, social group work and social action. 1954-55 and alternate years. Evening.

124 *Public Welfare* (3)

Grady

The organization of public welfare—federal, state, and local; the care of various classes of dependents and methods of treatment; personnel finance, and public relations. 1954-55 and alternate years. Evening.

126 *Urban Sociology* (3)

Types of cities; their origin, location, composition, functions, and problems; urban group life and personality; housing and city planning. 1955-56 and alternate years.

127 *Community Organization* (3)

Geisert

The study of social interaction in American communities, factors making for disorganization, community leadership, methods of organizing social forces to meet community needs. Morning.

* Sociology 1 is prerequisite to all other courses in Sociology.

- 130 *Cultural Anthropology* (3) Geisert
Human origins, the development of social life and customs, organization and structure of human relationships, social systems, patterning and coordination of culture. Morning.
- 131 *Social Institutions* (3)
The origin and development of social institutions, basic needs producing institutional forms, structures and functions of principal institutions and their interrelationships. 1955-56 and alternate years.
- 132 *Marriage* (3) Lavell
The reasons for marriage, marriage laws, mate selection, courtship, husband-wife relations, factors in marital adjustment, marriage prediction and counseling. Morning. (Also offered 1954 summer term.)
- 133 *The Family* (3) Geisert
A study of the primitive and modern family, changing functions and roles of the family and its members, factors promoting disorganization, family crises, family reorganization. Morning.
- 134 *Sociology of Child Development* (3) Sheldon
The socialization of the child through the home and other social institutions; the changing status of childhood, dependent and handicapped children, child labor. Evening.
- 135-36 *Crime and Delinquency* (3) Geisert
The nature and distribution of crime, factors producing criminal behavior, police systems, the criminal and juvenile courts, the prison system, probation and parole. Morning.
- 141 *Population and Migration* (3)
The composition of population, theories of population growth, factors producing population movements, effects of migration, trends in population growth, population policies. 1955-56 and alternate years.
- 151 *Industrial Sociology* (3) Lavell
Interrelationships of industry and community; sociological analysis of work situation, labor movement, industrial leadership, and morale; and of the aged, ethnic, and woman worker. Morning.
- 161 *Social Stratification: Class and Status* (3)
The nature of the class structure, patterns of status and prestige relations in American society, and an analysis of differential class behavior and comparative social structures.
Summer term 1954.
- 162 *Social Movements* (3) Lavell
Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and to show the way in which social movements develop. 1955-56 and alternate years.
- 164 *Social Control* (3)
Informal and formal phases of human control; analysis of methods of control used in modern society and the situations in which they occur; policies and techniques of control. 1955-56 and alternate years.

- 172 *Contemporary Social Theory* (3) Geisert
A systematic study of the important schools of contemporary sociology, including recent European as well as American developments, and an evaluation of the scientific contribution of each school. Evening.
- 181 *Methods of Social Research* (3) Sheldon
An analysis of social research techniques and the scientific method; the application of the case study, social survey, statistical, sociometric, and experimental methods to social data. Evening.

THIRD GROUP

- 223 *Seminar: Social Structure* (3) Geisert
Development and general characteristics of social structure, the role of customs in determining forms of structure, analysis of status by types. 1954-55 and alternate years. Evening.
- 224 *Seminar: Current Trends in Sociology* (3) Geisert
Analysis and evaluation of structure-function theory of social systems, manifest and latent functions, and an appraisal of systematic theory in sociology. 1954-55 and alternate years. Evening.
- 227 *Seminar: Social Relations* (3)
General characteristics of small groups and their measurement, sociology of groups, evaluation of small group theory and sociometry, other techniques of group research. 1955-56 and alternate years.
- 228 *Seminar: Mass Communication* (3)
The communication process; barriers to communication; structure and function of communication in society; content, control, support and effects of mass communication. 1955-56 and alternate years.
- 295-96 *Research* (arr.) The Staff
Time and credits to be arranged. (Also offered 1954 summer term.)
- 299-300 *Thesis* (3-3) The Staff
Time to be arranged. (Also offered 1954 summer term.)

SPEECH

Lubin Poe Leggette, A.M., *Depew Professor of Speech, Executive Officer*

Calvin Weir Pettit, Ph.D., *Professor of Speech; Director of Speech Clinic*

George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*

Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*

Edith Shores Surrey, A.M., *Assistant Professor of Speech*

Lee Sheward Bielski, A.M., *Assistant Professor of Speech*

Bachelor of Arts with a major in Speech (Columbia College—Departmental).
—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 62, including Speech 1, 2, 11, 32.

Required: the general requirements as stated on pages 77-82, including the passing of a speech proficiency test early in the program, Speech 101, 131, 153, 175, and a minimum of twelve additional hours in second-group courses in the speech arts or speech science, as approved by the adviser.

Bachelor of Arts in Education with a teaching field in Speech (School of Education).—Prerequisite: the Education curriculum, page 64.

Required: the Speech option, page 158, and the professional courses listed on pages 158-59.

FIRST GROUP

A *Speech Clinic*

Individual or group lessons, without academic credit, for such speech difficulties as lipping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, \$6; for group lesson, \$4. (Also offered 1954 summer term.) Pettit and Staff

B *American Speech for Foreign Students*

Individual or group instruction without academic credit, in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Fee: for individual lesson, \$6; for group lesson, \$4. (Also offered 1954 summer term.) Bielski and Staff

1 *Effective Speaking (3)*

Preparation and delivery of extempore speeches; developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, \$3. Morning, afternoon, and evening sections. (Also offered 1954 summer term.) Leggette and Staff

Speech 1X, same as 1, offered spring term. Morning, afternoon, and evening sections.

- 2 *Persuasive Speaking* (3) The Staff
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. Morning and evening sections. (Also offered 1954 summer term.)
- 11 *Training the Speaking Voice* (3) The Staff
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, \$3. Morning, afternoon, and evening sections. (Also offered 1954 summer term.)
Speech 11x, same as 11, offered spring term. Morning and evening sections.
- 32 *Oral Reading* (3) The Staff
Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11 or the permission of the instructor. Recording fee, \$3. Morning and evening sections. (Also offered 1954 summer term.)

SECOND GROUP

- 101 *Voice and Phonetics* (3) Pettit
A study of the International Phonetic Alphabet and its application to the student's own speech improvement; also personal application to such fields as theatre, public speaking, speech correction, radio, and foreign languages. Recording fee, \$3. Afternoon.
- 102 *Oral Interpretation of Literature* (3) Leggette
Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry and prose. Prerequisite: Speech 32 or permission of the instructor. Recording fee, \$3. Afternoon.
- 131 *Group Discussion and Conference Leadership* (3) Stevens
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: six credit hours of speech or the permission of the instructor. Evening. (Also offered 1954 summer term.)
- 136 *Public Discussion and Debate* (3) Henigan
Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: six credit hours of speech or the permission of the instructor. Afternoon.

- 137 *Radio and TV Speaking and Production* (3)
Radio and television speeches, interviews, and discussions; techniques of direction and production. Prerequisite: Speech 32 or permission of the instructor. Recording fee, \$5. Afternoon.
- 138 *Radio and TV News Reporting* (3)
(See Journalism 138.)
- 141 *Advanced Forms of Public Address* (3) Henigan
A study of the structure, style, and delivery of speeches for formal occasions with special emphasis on the psychology of the audience and the occasion. Prerequisite: nine credit hours of speech. Afternoon.
- 146 *Speech Criticism* (3) Henigan
A study of rhetorical theory with application to the criticism of representative American and British oratory. Prerequisite: nine credit hours of speech. Evening.
- 153-54 *Play Production* (3-3)
A survey of the art of theatre in all its aspects, including a study of acting techniques, play direction, scenic design and general production problems; a study of the nature of theatre in society, with particular attention to the contemporary non-professional and regional theatre. Laboratory fee, \$5 a term. Afternoon.
- 155-56 *Play Production Practice* (1-1) The Staff
Practical work in theatre. Time to be arranged.
- 166 *History of the Theatre* (3)
A general survey of the rise of the theatre, the Classical, Medieval, Renaissance, later English and Continental, and the Modern theatre. Admission by permission of the instructor. Afternoon.
- 169 *Creative Dramatics and Children's Theatre* (3)
A study of creative dramatics and its use as a learning tool, with problems and experience in producing children's plays. Evening. Pettit
- 175-76 *Speech Correction* (3-3)
A study of the causes of the disorders of speech with emphasis on methods in diagnosis and treatment of defective speech. Admission by permission of the instructor. Laboratory fee, \$5 a term. Evening. Pettit
- 177-78 *Clinical Practice in Speech Therapy* (1-1) The Staff
Case work in remedial speech. This course may be repeated for a total of four credit hours. Prerequisite: Speech 175. Time to be arranged. (Also offered 1954 summer term.)
- 180 *Speech Pathology* (3) Pettit
An advanced study of the causes and symptoms of the major physiogenic and psychogenic disorders. Admission by permission of the instructor. (Not offered in 1954-55.)

- 182 *Introduction to Hearing Problems* (3) Pettit
A study of the field of audiology including anatomy of the ear, tests of hearing, speech reading, and auditory training. Admission by permission of the instructor. Laboratory fee, \$5. Evening.
- 183-84 *Clinical Practice in Hearing Therapy* (1-1) The Staff
Case work with persons handicapped with hearing losses. This course may be repeated for a total of three credit hours. Prerequisite: Speech 182. Time to be arranged. (Also offered 1954 summer term.)
- 191-92 *Proseminar in Speech Correction* (3-3) The Staff
(Not offered in 1954-55.)

STATISTICS

Frank Mark Weida, Ph.D., *Professor of Statistics, Executive Officer*
 Everett Herschel Johnson, Ph.D., *Professor of Statistics*
 Solomon Kullback, Ph.D., *Lecturer in Statistics*
 Chester Hayden McCall, Jr., A.M., *Instructor in Statistics*

Bachelor of Arts or Bachelor of Science with a major in Mathematical Statistics (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 62 and 63. Electives must include Mathematics 12, 19, and 20; Statistics 91-92; and Philosophy 121 and 122.

Required: the general requirements stated on pages 77-82, including Statistics 117, 118, 155-56, 157-58, and 197-98; a minimum of twenty-four credit hours of approved second group courses in departments in the Division of Mathematics and the Physical Sciences or in departments in the Division of the Natural Sciences or in departments unrelated to Statistics; and the grade of "pass" on the major examination at the end of the senior year. For further details, consult the Adviser.

Master of Arts or Master of Science in the field of Mathematical Statistics (Columbian College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Statistics at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86. The required thirty credit hours, in addition to a thesis in Statistics, includes at least twelve credit hours to be selected from approved third group courses in Statistics. The remaining twelve credit hours may be selected from graduate work offered by departments in the Division of Mathematics and the Physical Sciences or by departments in the Division of the Natural Sciences with the approval of the adviser.

Doctor of Philosophy (Graduate Council).—See page 92.

Bachelor of Science in Engineering with an option in Statistics (School of Engineering.)—For curriculum requirements, see pages 127-29 and 133.

Bachelor of Arts in Government and Master of Arts in Government with major in Business and Economic Statistics (School of Government).—See pages 170-71, 173 and 174-76, 177.

FIRST GROUP

The Staff

51 *Introduction to Business and Economic Statistics* (3)

Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, \$6. Lecture (2 hours)—morning and evening sections; laboratory (2 hours)—afternoon and evening sections. (Also offered 1954 summer term.) Evening.

Statistics 51x, same as 51, offered spring term.

52 Mathematics of Finance (3)

The Staff

Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation, building and loan associations. Prerequisite: one entrance unit in algebra. Morning and evening sections. (Also offered 1954 summer term.)

Statistics 52x, same as 52, offered fall term. Morning, afternoon, and evening sections.

53 Introduction to Statistics in Psychology and Education (3)

The Staff

Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, profiles, norms and their use, frequency distributions, intelligence and other quotients, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in algebra. Laboratory fee, \$6. Lecture (2 hours)—morning and evening sections; laboratory (2 hours)—afternoon and evening sections.

Statistics 53x, same as 53, offered spring term. Evening.

†91-92 Principles of Statistical Methods* (3-3)

McCall

This course emphasizes the meaning, uses, and applications of: variates and attributes, measurement and enumeration, averages and dispersion, frequency distributions and their characteristics, errors of measurement and their control, index numbers, trends, cyclical relatives, purposive and random sampling in theory and practice and their errors and estimates, correlation in theory, practice, and applications. Prerequisite: one entrance unit in algebra. Laboratory fee, \$6 a term. Lecture (2 hours); laboratory (2 hours). Evening. (Also offered 1954 summer term.)

SECOND GROUP**105x Statistics in Psychology and Education (3)**

Weida

Advanced study of correlation and frequency analysis, sampling theory, factor analysis, and applications to specific problems utilizing case method of study in so far as possible. Original work is required of each student. Prerequisite: Statistics 53; Laboratory fee, \$6. Lecture (2 hours), laboratory (2 hours). Evening.

109 Managerial Statistics (3)

Johnson

Role of statistics and the contribution of statistical procedures in various phases of business management with emphasis on the need for and usefulness of the statistical method rather than the mechanics of analysis. Subject matter comprises sources and methods for collecting data, effective forms of presentation, techniques for summarizing and analyzing quantitative and qualitative information, interpretation of and inferences from available data. Admission by permission of the instructor or following Statistics 51. (Not offered in 1954-55.)

* Statistics 91-92 is for Statistics majors, for students in engineering and in the biological and physical sciences.

- 110 *Quality Control Techniques* (3) Johnson
 Characteristics: scientific basis; reduction in cost of inspection, rejections, and tolerance limits; quality as an attribute; distribution of quality characteristics; laws basic to control; statistical and maximum control; detection of lack of control. Admission by permission of the instructor or following Statistics 51. (Not offered in 1954-55.)
- 111 *Business and Economic Statistics I* (3) Johnson
 Statistical processes as related to particular types of problems encountered in business administration and economic research. Subject matter comprises characteristic values, measures of variability, sampling processes, sampling distributions, and simple correlation. Admission by permission of the instructor. Morning and evening sections.
- 112 *Business and Economic Statistics II* (3) Johnson
 Application of statistical methods to specific problems of business administration and economics. Subject matter comprises multiple and partial correlation, time series analysis, index numbers, business cycles, demand functions, and depreciation schedules. Prerequisite: Statistics 111 or the equivalent. Morning and evening sections.
- 117 *Analysis of Variance* (3) McCall
 The analysis of variance and covariance to segregate factors producing significant variation, a method to estimate experimental error, multiple classification with unequal class frequencies. Prerequisite: Statistics 91-92. Evening. (Also offered 1954 summer term.)
- 118 *Correlation and the Chi-Square Test* (3) McCall
 Advanced study of simple, partial, and multiple correlation. Rank correlation, the method of contingency, and the problem of normal and non-normal populations. Tests of independence, likeness, and goodness of fit. Prerequisite: Statistics 91-92. Evening. (Also offered 1954 summer term.)
- †155-56 *Mathematical Probability* (3-3) Weida
 Definitions, enumeration of cases, total and compound probability, repeated trials, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, law of large numbers and its applications. Prerequisite: Mathematics 2c and Statistics 91-92. Evening.
- †157-58 *Mathematical Statistics* (3-3) Weida
 Statistics as a science, types of problems, relative frequency and probability, binomial and multinomial distributions, Pearson system of curves, Gram-Charlier series, Cauchy distribution, correlation by regression method, Lexis theory of dispersion, generating functions, simple sampling theory, moments and semi-invariants. Prerequisite or concurrent registration: Statistics 155-56. Evening.
- 195-96 *Reading and Research in Business and Economic Statistics* (3-3) Johnson
 Admission by permission of the instructor. Time to be arranged.

- †197-98 *Statistical Mathematics** (3-3) Weida
Matrix algebra, quadratic forms, contour integration, measure theory, Stieltjes integration, Cauchy theory of residues, n-dimensional geometry in flat spaces. Prerequisite: Mathematics 139 or the equivalent. Evening.
- 199-200 *Proseminar: Theoretical and Applied Statistics* (3-3) Weida
In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor. Time to be arranged.

THIRD GROUP *

- 201 *Design of Experiments* (3) Kullback
Relative merits of random, repeated, stratified, and double sampling; Fisher-Pitman method of randomization; randomized blocks; Latin squares; factorial design; confounding, partial confounding. Evening.
- 202 *Theory of Estimation and Testing Hypotheses* (3) Kullback
Statistical hypotheses; maximum likelihood estimate; Markoff's best estimate; Neyman-Pearson theory of testing hypotheses; Bayes' theory; consistent, efficient, and sufficient statistics; theory of confidence intervals. Evening.
- †203-4 *The Theory of Econometrics* (3-3) Johnson
Statistical methods applied to the analysis of production, supply, and demand; utility and disutility; interest and taxation; exchange. Stress is placed on the interpretation of results in terms of probability, correlation and regression of time series. Admission by permission of the instructor. (Not offered in 1954-55.)
- 205-6 *Advanced Business and Economic Statistics* (3-3) Johnson
Application of statistical methods to specific problems utilizing case method in so far as possible. Emphasis is placed on source materials, role of statistical methods, techniques of analysis, interpretation and presentation of results. Original work is required of each student. Prerequisite: Statistics 112 or the equivalent. (Not offered in 1954-55.)
- †257-58 *Advanced Mathematical Statistics* (3-3) Weida
Mathematical basis of distribution functions, moments and cumulants, probability and likelihood, sampling distributions exact and approximate. Chi-square distribution, association and contingency, various conceptions of correlation, individual difference problem, time series, regression analysis, analysis of variance, theories of inference. (Not offered in 1954-55.)

* Statistics 197-98 is prerequisite to all third-group courses.

- †259-60 *Advanced Mathematical Probability* (3-3) Kullback
 Modern theories and asymptotic laws; elementary theory of definite integration; limit theorems in probability; the contributions of Cramér, Frechet, Kolmogoroff, Khintchine. Prerequisite: Statistics 257-58 or the equivalent. Evening.
- †263-64 *Statistical Inference* (3-3) Weida
 Sample space; methods for estimating population parameters; fiducial inference and its application to testing hypotheses; valid, efficient, and exact estimation; Student's distribution; variance distribution; sampling statistics, i.e., moments and cumulants used as estimates of population parameters and used to test hypotheses. Prerequisite or concurrent registration: Statistics 257-58 or the equivalent. (Not offered in 1954-55.)
- †265-66 *Multivariate Analysis* (3-3) Weida
 Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis (Not offered in 1954-55.)
- †267-68 *Characteristic Functions* (3-3) Kullback
 Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (Not offered in 1954-55.)
- †269-70 *Sequential Testing* (3-3) Kullback
 Efficiency of sequential tests, sequential probability ratio test, expected number of observations necessary for a decision, truncated sequential analysis, sequential tests of single and composite hypotheses. (Not offered in 1954-55.)
- 295-96 *Reading and Research* (3-3) Weida
 Admission by permission of the instructor. Time to be arranged.
- 299-300 *Thesis* (3-3) Weida

SURGERY

- Brian Blades, A.B., M.D., *Professor of Surgery, Executive Officer*
 Paul Stirling Putzki, M.D., *Clinical Professor of Surgery*
 Arch Lockhart Riddick, B.S., M.D., *Clinical Professor of Surgery*
 John Hugh Lyons, M.D., M.S., *Clinical Professor of Surgery*
 John Gordon Lee, A.B., M.D., C.M., Med. Sc.D., *Adjunct Clinical Professor of Surgery*
 Robert Tuthill Gants, A.B., B.S., M.D., *Adjunct Clinical Professor of Surgery*
 Herbert Hermann Schoenfeld, M.D., *Associate Clinical Professor of Surgery*
 Alec Horwitz, M.S., M.D., *Associate Clinical Professor of Surgery*
 William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*
 Walter Henry Gerwig, Jr., A.B., M.D., *Associate Clinical Professor of Surgery*
 Vincent Michael Iovine, B.S., M.D., *Associate Clinical Professor of Surgery*
 Owen Gwathmey, A.B., M.D., *Assistant Professor of Surgery*
 Benjamin Franklin Dean, Jr., M.S., M.D., *Assistant Clinical Professor of Surgery*
 Carl Berg, M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Calvin Trexler Klopp, A.B., M.D., *Assistant Clinical Professor of Surgery*
 Julius Salem Neviaser, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery*
 Leonard Theodore Peterson, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 John Pletch Adams, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Richard Knight Thompson, D.D.S., *Associate in Dental Surgery*
 William Ross Morris, M.D., *Associate in Surgery*
 Jacob Joseph Weinstein, B.S., Phar.G., M.D., *Associate in Surgery*
 William Carey Meloy, M.D., M.S. in Med., *Associate in Surgery*
 Edward Alexander Cafritz, M.D., *Associate in Surgery*
 Gordon Sparks Letterman, B.S., M.D., *Associate in Surgery*
 Karl Hayden Wood, Phar.G., D.D.S., *Associate in Dental Surgery*
 Paul Charles Adkins, A.B., M.D., *Instructor in Surgery*
 Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*
 Joseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*

- Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*
 Leon Gerber, M.D., *Clinical Instructor in Surgery*
 Thomas Bradley, A.B., M.D., *Clinical Instructor in Surgery*
 Ernest Alva Gould, B.S., M.D., *Clinical Instructor in Surgery*
 Austin Bertram Rohrbaugh, Jr., M.D., *Clinical Instructor in Orthopedic Surgery*
 Marvin Hayne Kendrick, A.B., M.D., *Clinical Instructor in Surgery*
 Brooks Gideon Brown, B.S., M.D., *Clinical Instructor in Surgery*
 Lois Irene Platt, A.B., M.D., *Clinical Instructor in Surgery (Cancer Cytology)*
 John Decator Hoyle, B.S., M.D., *Clinical Instructor in Surgery*
 Henry Leon Feffer, A.B., M.D., *Clinical Instructor in Orthopedic Surgery*
 Robert Roland Smith, B.S., M.D., *Clinical Instructor in Surgery*
 Howard Clemeth Pierpont, A.B., M.D., *Clinical Instructor in Surgery*
 Norman Harry Isaacson, A.B., M.D., *Clinical Instructor in Surgery*
 Charles Stanley White, Jr., B.S., M.D., *Clinical Instructor in Surgery*
 James Edward Boland, B.S., M.D., *Clinical Instructor in Surgery*
 Dennis Parfremment McCarty, M.D., *Clinical Instructor in Surgery*
 James Richard Thistlethwaite, B.S., M.D., *Clinical Instructor in Surgery*

101-2 *Surgical Anatomy*

Surgery and Anatomy Staffs

Clinics illustrating relationship between gross anatomy and clinical surgery. One hour every two weeks. University Hospital.

280 *Introduction to Surgery*

Lectures and recitations covering the field of general surgery. One hour twice a week. The Staff

284 *Surgical Physiology*

A clinical and laboratory course with particular emphasis on applied physiology. Two hours a week. The Staff

373-74 *Clinical Clerkship I*

The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital. The Staff

375-76 *Outpatient Surgical Clinic*

Surgical clinic. Forty hours. D. C. General Hospital. The Staff

377-78 *Orthopedics I*

Weekly orthopedic lecture, D. C. General Hospital; weekly seven and one-half hour ward rounds, D. C. General Hospital. The Staff

379-80 *Surgical Staff Conference I*

Tuesday at D. C. General Hospital. Blades

383-84 *Surgical Clinic I*

Demonstration of various surgical diseases to the entire class. One hour a week. One

- 473-74 *Clinical Clerkships II* The Staff
Six weeks, University Hospital; three weeks, Mt. Alto Hospital.
- 479-80 *Surgical Staff Conference II* The Staff
Wednesday at the University Hospital.
- 483-84 *Surgical Ward Rounds* Blades
Demonstration of various surgical diseases to fourth-year clerks. One hour a week. University Hospital.
- 491-92 *Surgical Pathology II* Newman
One hour conferences each week.
- 493-94 *Surgical Anatomy* Horwitz and Staff
Lectures for fourth-year clerks. One hour a week for twelve weeks. University Hospital.
- 497-98 *Surgical Clinic* Blades and Staff
Conferences for fourth-year clerks assigned to the University Hospital. Two hours a week. Walter Reed Hospital.

UROLOGY

Frederick A. Reuter, M.D., *Professor of Urology, Executive Officer*
 Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
 Edward Egner Ferguson, M.D., *Assistant Clinical Professor of Urology*
 Gilbert Ottenberg, A.M., M.D., *Associate in Urology*
 William Dabney Jarman, B.S., M.D., *Associate in Urology*
 Leon Richard Culbertson, B.S., M.D., *Associate in Urology*
 Gordon Rhodes MacDonald, B.S., M.D., *Clinical Instructor in Urology*
 Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*
 Frederick Turner Reuter, M.D., *Clinical Instructor in Urology*
 Hamilton Peacock Dorman, B.S., M.D., *Clinical Instructor in Urology*

395-96 *Clinics*

The Staff

Clinical teaching and demonstrations on the care of urological cases with special emphasis on the pre- and post-operative management. Operative clinics and clinical teaching. D. C. General Hospital.

491-92 *Urology*

F. A. Reuter and Staff

Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology. One hour a week.

495-96 *Clinics*

F. A. Reuter and Staff

Clinical demonstrations, teaching in the Outpatient Department, and urological X-ray conferences, with special attention given to diagnostic procedures. One part of each section three hours a week. University Hospital.

ZOOLOGY *

Ira Bowers Hansen, Ph.D., *Professor of Zoology, Executive Officer*
 Kenneth Casper Kates, Ph.D., *Professorial Lecturer in Zoology*
 Edith Elizabeth Mortensen, Ph.D., *Associate Professor of Zoology*
 Alton Harold Desmond, M.S., *Assistant Professor of Zoology*

Bachelor of Arts or Bachelor of Science (Columbian College—Field-of-Study).
 —Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 52-63, including Zoology 1-2.

Required: the general requirements as stated on pages 77-82, and the grade "pass" on the Zoology major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) classification, structure, and ecological relations of animals, both invertebrate and vertebrate; (2) embryological development and life histories of important animal types; (3) general principles of physiology, heredity, and evolution; (4) the development of biological principles, hypotheses, and theories as revealed in the study of the history of zoology.

Master of Arts or Master of Science in the field of Zoology (Columbian College).—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Zoology at this University, or the equivalent.

Required: the general requirements as stated on pages 83-86.

Doctor of Philosophy (Graduate Council).—See page 92.

FIRST GROUP

1-2 *Introduction to Zoology* (4-4) Mortensen, Hansen

An introduction to the study of the structure, functions, and relation of animals, and of the fundamental biological principles involved. Material fee, \$9 a term. Lecture (2 hours)—morning and evening sections; laboratory (4 hours)—morning, afternoon, and evening sections. (Also offered 1954 summer term.)

41-42 *Comparative Vertebrate Anatomy* (3-3) Desmond

Lectures on the organ systems of the vertebrates, laboratory dissections of types. Prerequisite: Zoology 2. Material fee, \$9 a term. Lecture (1 hour)—morning and evening sections; laboratory (4 hours)—morning and evening sections.

SECOND GROUP

101-2 *Invertebrate Zoology* (3-3) Mortensen

A systematic study of invertebrate forms, including the study of morphology, classifications, life histories, and phylogenetic relationships. Occasional field trips. Prerequisite Zoology 1-2 or Biology 1-2. Material fee, \$6 a term. Lecture (1 hour); laboratory (4 hours). 1954-55 and alternate years, evening; 1955-56 and alternate years, afternoon.

* See also the departments of Biology and Botany.

- 105 *Entomology* (3) Munson
A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Prerequisite: Zoology 1-2, or the equivalent. Material fee, \$6. Lecture (1 hour); laboratory (4 hours). 1954-55 and alternate years. Evening.
- 138 *Histology* (3) Desmond
An introduction to the microscopical anatomy of normal tissues and organs. Prerequisite: Zoology 1-2. Material fee, \$9. Lecture (1 hour); laboratory (4 hours). 1954-55 and alternate years, afternoon; 1955-56 and alternate years, evening.
- 145 *Introduction to Vertebrate Embryology* (3) Hansen
The origin and early development of the individual and the formation of organ systems. Emphasis is placed on the frog, chick, and pig, with reference to the human embryo. Prerequisite: Zoology 2, and 41 or 42. Material fee, \$9. Lecture (1 hour); laboratory (4 hours). 1954-55 and alternate years, afternoon; 1955-56 and alternate years, evening. (Also offered 1954 summer term.)
- 152 *Protozoa* (3) Mortensen
An introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Prerequisite: Zoology 1. Material fee, \$6. Lecture (1 hour); laboratory (4 hours). 1955-56 and alternate years. Evening.
- 156 *Parasitology* (3) Kates
An introduction to the study of animal parasitology, with a survey of parasitic types from protozoa through arthropods. Prerequisite: Zoology 1-2 or the equivalent. Material fee, \$9. Evening.
- 162 *Insect Physiology* (3) Munson
Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, \$9. 1954-55 and alternate years. Evening.
- 171-72 *Special Problems* (3-3) The Staff
Written approval of the instructor is required. Material fee, \$9 a term. Time to be arranged.
- 199-200 *Proseminar* (3-3) The Staff
A course designed to correlate and supplement the work of Zoology majors. Morning and evening sections.

THIRD GROUP

- 203 *Seminar in Invertebrate Zoology* (3) Mortensen
A study of original publications on hormones of invertebrate animals. (Not offered in 1954-55.)
- 214 *Advanced Invertebrate Zoology* (3) Mortensen
Lectures and laboratory work on problems in invertebrate physiology. Prerequisite: Zoology 1 and 101-2 or the equivalent. Material fee.

86. Lecture (2 hours); laboratory (2 hours). (Not offered in 1954-55.)

247-48 *Morphogenesis* (3-3) Hansen

Lectures and class reports on experimental morphology. Prerequisite: Zoology 41-42, or the equivalent. 1954-55 and alternate years. Evening.

251-52 *Seminar in Vertebrate Zoology* (3-3)
(Not offered in 1954-55.)

295-96 *Research* (arr.)

The Staff

Investigation of special problems. Time and credits to be arranged. (Also offered 1954 summer term—Zoology 295 (3).)

299-300 *Thesis* (3-3)

The Staff

Time to be arranged. (Also offered 1954 summer term—Zoology 299 (3).)

STUDENT LIFE

STUDENT LIFE

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization in the University Hospital for not more than one week during any twelve-month period.

Hospitalization includes board and nursing but does not include special services such as operating room, anesthesia, laboratory, X-ray, or medications. For a statement of the rules governing medical and hospital privileges, see Health Administration, pages 195-96.

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at \$35 a month and double rooms at \$30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. A separate application for a room should be made well in advance (for the fall term by May first, for the spring term by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for twelve or more credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for \$24 a month a person. Dining facilities are available to all residents. Meals are served at the Student Union. Application forms for reservations may be obtained from the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University for women students twenty-one years of age or older and for men students may be obtained at the Housing Office, 2027 G Street NW. The reservation of rooms in private houses must be made by students.

RELIGIOUS LIFE

The University recognizes the contribution that religion can make to the education of its students by encouraging them to participate in denominational clubs of their own choice. National Catholic, Jewish, and Protestant bodies sponsor these religious organizations, which act as links between the University and the local churches. The Director of the University Chapel and the advisers to the various denominational organizations are available throughout the year for consultation on personal problems.

UNIVERSITY CHAPEL

The University Chapel is maintained as a non-sectarian expression of the faith of the University in the contribution that religion can make to the education of its students. Twenty-minute services are held Wednesday of each week at 12:10 P.M. Representative clergymen of Washington are guest speakers at these non-denominational services.

PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

VOCATIONAL COUNSELING

The University Testing Center is located at 2114 G Street NW. The Center offers educational and vocational testing and counseling service. This office maintains a file of occupational information and training opportunities.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the game room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

INTERNATIONAL HOUSE

The International House, 2116 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

DIRECTORS OF STUDENT ACTIVITIES

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as, student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

STUDENT GOVERNMENT

Student Council

The Student Council is responsible to the Director of Activities for Men and the Director of Activities for Women for the conduct of all student activities. Members of the Council are elected annually.

Committee on Student Life

The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following members of the Student Council, an Editor of the *Hatchet*, President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee.

Approval of Student Organizations.—This committee is granted au-

thority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

- 1 A member of the Dance Production groups, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Inter-fraternity Council, Student Life Committee, or any publications staff
- 2 An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin called "Rules and Regulations Governing Student Activities".

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Phi Beta Kappa.—A national honor society recognizing "outstanding intellectual capacity well employed" in the field of liberal arts and sciences. Senior and junior students who are candidates for the degree of Bachelor of Arts or Bachelor of Science in Columbian College (in exceptional cases, senior and junior students in other non-professional divisions of the University) and who have shown broad cultural interests, distinguished scholarly achievement, high character, general promise, and scholarly ideals may, to a number not exceeding 15 per cent of a class, be elected to membership by the Faculty members of the Alpha Chapter of the District of Columbia.

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

- Alpha Kappa Delta*.—A national sociology society.
- Alpha Lambda Delta*.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.
- Alpha Pi Epsilon*.—A home economics fraternity.
- Arnold Air Society*.—A national Air Force ROTC society.
- Artus*.—A national economic society.
- Delphi*.—An intersorority society.
- Delta Sigma Rho*.—A national forensic society.
- Gate and Key*.—An interfraternity society.
- Iota Sigma Pi*.—A national chemical society for women.
- Mortar Board*.—A national society for senior college women, stressing leadership, scholarship, and service.
- Omicron Delta Kappa*.—A national fraternity emphasizing leadership in extracurricular activities.
- Order of the Coif*.—A national legal society, the purpose of which is to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship. Members are elected each year from the highest 10 per cent of the graduating class of the Law School.
- Phi Epsilon Phi*.—A national botany fraternity.
- Phi Eta Sigma*.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.
- Pi Delta Epsilon*.—A national collegiate journalism fraternity.
- Pi Gamma Mu*.—A national social-science society.
- Psi Chi*.—A national psychology fraternity.
- Sigma Alpha Eta*.—A national speech and hearing society.
- Sigma Pi Sigma*.—A national physics fraternity.
- Sigma Tau*.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.
- Smith-Reed-Russell Society*.—A scholastic society in the School of Medicine. Students of the third and fourth years who maintain a scholastic average of 86 per cent are eligible for associate membership.
- Tassels*.—A sophomore society.
- William Beaumont Medical Society*.—A society founded with the object of encouraging and stimulating medical students in work of individual investigation.

PROFESSIONAL ORGANIZATIONS

- Alpha Chi Sigma* (chemistry), *Alpha Epsilon Iota* (medicine), *Alpha Kappa Psi* (commerce and economics), *Alpha Zeta Omega* (pharmacy).

American Institute of Electrical Engineers (student chapter), American Institute of Radio Engineers (student chapter), American Pharmaceutical Association (student branch), American Society of Civil Engineers (student chapter), American Society of Mechanical Engineers (student chapter), Chi Upsilon (geology), Delta Phi Epsilon (foreign service), Delta Theta Phi (law), Future Teachers of America, Gamma Eta Gamma (law), Kappa Beta Pi (law), Kappa Psi (pharmaceutical), Nu Beta Epsilon (law), Nu Sigma Nu (medicine), Phi Alpha Delta (law), Phi Chi (medicine), Phi Delta Delta (law), Phi Delta Epsilon (medicine), Phi Delta Gamma (graduate), Phi Delta Kappa (education), Phi Delta Phi (law), Pi Lambda Theta (education), Society for the Advancement of Management (student chapter), Theta Tau (engineering).

SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Kappa Alpha, Theta Delta Chi, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Alpha, Sigma Nu, Acacia, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta.

DEPARTMENTAL CLUBS

Art Club; Case Club; Charles Clinton Swisher History Club; Dance Production Groups, I, II, III; El Club Español; Engineers' Council; Enosinian Debating Society; Home Economics Club; Howard E. Kane—A.F.A. King Obstetrical Society; Le Cercle Français; Lester F. Ward Sociological Society; Oquassa; Pharmacy Council; Psychology Club; Schoenfeld Verein; Student Bar Association.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Club, Christian Science Organization, Lutheran Student Association, Newman Club, Religious Council, Wesley Club, Westminster Foundation.

MUSICAL ORGANIZATION

The George Washington University Glee Club.

STUDENT PUBLICATIONS

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mecheleciv* (engineers' publication), *The Percolator* (pharmaceutical publication).

OTHER ACTIVITIES

Alpha Phi Omega—National Service Fraternity, Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Chess Club, Colonial Boosters, Fencing Club, Flying Sponsors, Inter-fraternity Council, Inter-fraternity Pledge Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Intramural Council, Junior Panhellenic Association, Masonic Club, Sailing Association, Senior Panhellenic Association, Strong Hall Council, Student Council, The George Washington University Dramatic Activities, Women's Coordinating Board, Women's Recreation Association.

There is a complete program of intramural sports for both men and women.

SPECIAL RESEARCH PROJECTS

SPECIAL RESEARCH PROJECTS

BENJAMIN DOUGLASS VAN EVERA, Ph.D., 1508 Sleepy Hollow Rd.
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Coordinator of Scientific Activities

The Research Projects listed in this section are special projects which are set up for the specific purpose of attacking problems submitted by the sponsoring agency. Cooperation between these projects and the various departments of instruction is as close as the nature and needs of the projects and departments will permit. The projects are listed in the order in which they were undertaken by the University.

THE CHEMISTRY RESEARCH PROJECT

This project synthesizes compounds which may be of interest as high explosives. It is operated under a contract with the Department of the Navy.

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THE ELECTRONICS RESEARCH PROJECT

The Electronics Research Project does work in the general field of Nucleonics, the improvement of the operations of photomultiplier tubes, and the development of fast operating coincidence measurements, flip-flop circuits, and pulse generators. This project operates under contracts with the Department of the Navy.

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THE LOGISTICS RESEARCH PROJECT

The purpose of the Logistics Research Project is to study Logistics problems in all their aspects, to develop more efficient and expeditious methods of solving Logistics problems, and the application of computing machine techniques to the solution of these problems. As part of this study a large collection of operating data is being classified and coded for statistical study using modern machine methods. This project is operated under a contract with the Department of the Navy.

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THE HUMAN RESOURCES RESEARCH OFFICE

The Human Resources Research Office is set up to conduct studies, largely psychological and sociological, of problems arising in the various branches of the Department of the Army. The work is conducted in the three main fields of (1) Motivation, Morale, and Leadership; (2) Training Methods; and (3) Psychological Warfare. The Central Office, three of the research divisions, and an extensive Technical Services Division are located on the University campus. Three other research divisions work under the command of the Office of the Chief of Army Field Forces, and the technical supervision of the Central Office. They are situated at Fort Knox, Kentucky; Fort Ord, California; and Fort Benning, Georgia. Task force teams have been operating in the Far East since 1952, and an operating group is now in the early stages of formation in Europe.

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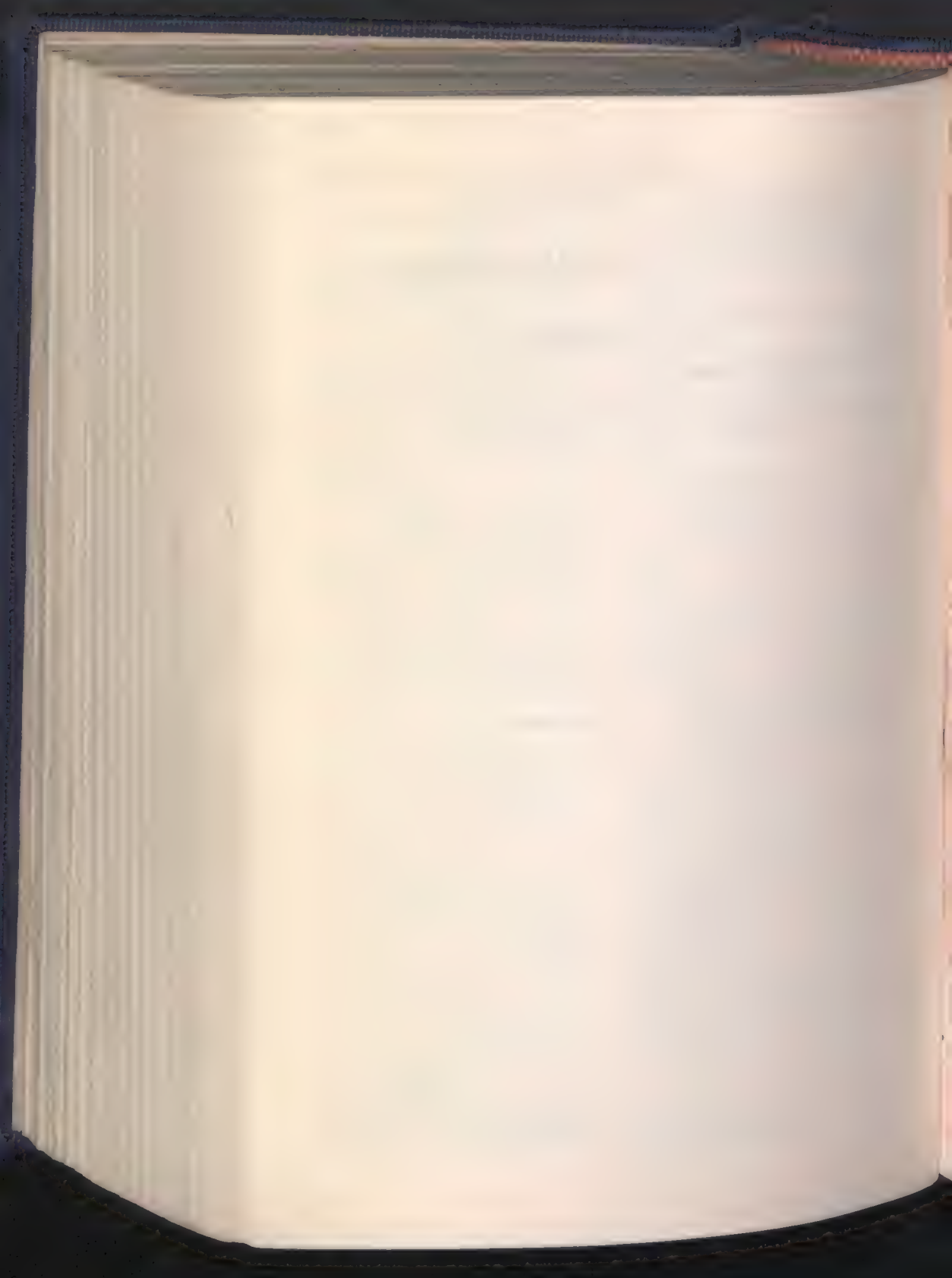
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SUMMER TERM 1953

FALL AND SPRING TERMS 1953-54

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Va.	Charles Oscar Monroet
N.J.	Imelda Frances Murray
D.C.	Charles Donald Nearman
Va.	Betty Jean Newel
Mo.	LeRoy Newark
D.C.	Pedro Berardo Noguera
D.C.	Kenneth Thompson Nathing
D.C.	Margaret Fealy Obeir
Va.	Robert Ambrose Osborn, Jr.
Fla.	Harry John Piccarello
D.C.	George Wason Pickens
D.C.	Mary Venables Pupe
D.C.	John Stanley Prach
D.C.	Guy Hamilton Putnam, Jr.
D.C.	Helen Carol Rathbone
Md.	Thelma Jean Reaman
Md.	Robert Hammond Reed
Ohio	Shirley Patricia Reed
Va.	Robert Regador
D.C.	Fyn Reissaz
Md.	Robert Meldrum Riggs
Md.	(With distinction)
Va.	Ruth Irene Sanderson
Md.	Israel Schacter
Md.	Gleason Orville Seaman, Jr.
Md.	Herbert Robert Seiden
Mich.	Irwin Sherman
Va.	Ann Brown Simpson
Va.	Nathaniel Edward Simpson
Md.	Arthur Lee Smith
Okl.	George Wright Smith
Md.	Constantine Joseph Smyth III
N.Y.	Lewisa Sosnowski
Mass.	Lillemor Elena Spitzer
D.C.	Helen Anna Strata
Md.	Corinne Medora Striker
Calif.	Marilyn Joan Tate
Pa.	Mary Landon Taylor
D.C.	Rebekah Thackston
D.C.	Carolyn Treusett
Va.	Theresa Golovin Tristipoe
N.Y.	William Joseph Tristipoe
N.Y.	Blanche Lewis Watson
III.	(With distinction)
	Lee Wallace Weinrich

Ga.
Ill.
D.C.
Md.
Ill.

Va.
Va.
D.C.
Md.
Md.
D.C.
D.C.
D.C.
Va.
Md.
N.Y.
D.C.
D.C.
Va.
Va.
D.C.
N.Y.
N.Y.
Md.
Pa.
D.C.
Colo.
Va.
N.I.
D.C.
D.C.

N.I.
D.C.
Md.
N.Y.
D.C.
Va.
D.C.
Md.
Ala.
D.C.
D.C.
D.C.
D.C.
Va.
Va.
Md.
Tenn.
Md.
Va.
Va.
Ind.

Ohio

Leo Weintraub
John Molyneux Welsh
Mary Kathleen Welsh

D.C. Harold Tyson Williams
Va. Jay Wheldon Williams
Va.

Fla.
Pa.

FEBRUARY 22, 1954

Scott Allen
Phyllis Clare Ames
Cleo Antholis
Margaret Anne Beller
Leah Joyce Block
(With distinction)
Janet Luthringer Carlisle
Lewis Cochran Cassidy IV
Allyn Dean Chapman
Philip Christopher Clancy
Charles Vincent Cutlip
John Griffith Davis
Charles Seymour Decker, Jr.
Judith Mary Drew
George Meade Emory
Marvanna Fields
Ivan Welton Fitzwater
Shirley Margaret Floyd
Glenn Herbert Frank
Georgia Franks
Joyce Louise Freedman
Howard Freshbrook
Nathaniel Simmons Fulford IV
Milton Eldredge Garrison
Margaret Palmer Gillies
Ralph Leonard Girdleson
Anne Andrea Glover
James Gratton Gore
Lawrence James Gray
Patricia Carol Gray
Janice Evelyn Graybeal
Frank Philip Greene
Donald Robert Gruver
Nathan Gray Hall
Nell Hancock
Mary Jean Hardy
Earl George Hendrick, Jr.
Richard Scott Hodgins
Susan Emily Hurst
June Jenkins
Dorothy Herrmann Jones
Elmer Karver
Gordon Jacob Klovdahl
Leroy Anest Komtras
Morris Alven Larsen
Robert Bruce Lander, Jr.
Philip Lazaroff
Janet Kaiden Lobred
Grant Elmer Mayberry

Va.
D.C.
D.C.
Md.
N.J.
Va.
D.C.
Va.
N.Y.
Mich.
D.C.
Md.
D.C.
Wash.
Va.
Md.
D.C.
Md.
D.C.
D.C.
N.J.
D.C.
Va.
Va.
D.C.
D.C.
D.C.
Va.
Md.
D.C.
N.C.
Tenn.
Va.
Va.
Va.
Va.
Md.
Va.
N.Y.
Md.
D.C.
D.C.
D.C.
D.C.
D.C.
Md.
Pa.
D.C.
D.C.
N.Y.
Va.
Md.
D.C.
Md.
Bashir Ahmad Zikria

Clyde Livingston McKinney
Katharine Jane McVey
Jeanne Delores Miller
Judith Roselm Moffett
(With distinction)
Bobbie Ruth Moore
Ernest Brown Mullings
John Joseph Nedrow
Britta Maria Delores Nykopp
Thomas Francis O'Connell
Augustine Ortiz, Jr.
Seiki Osakura
Tahmaseb Irani Parsons
Louis Vincent Perez
Stanley Durward Perry
Frederic Carl Porton
Gloria Belling Reeside
James Edwin Reynolds
Peter Michael Rich
John Wesley Robinson
Vernon Bishop Ross
Samuel Rudolph
Sue Ann Scott
Charlene Esther Semer
Ralph Morton Semaker
Everette Severe
Carolyn Elizabeth Shoup
Mitzi Lee Silverstein
Janet Simpson
Marvin Phillip Sirkis
Robert Ross Smith
Velsie Hill Snyder
Mark Franklin Spies
Evelyn Jane Staver
Norman Albert Stein
Daniel David Sullivan
Howard Francis Thomas
Raymond Edward Thomas
Michael E. Vlahos, Jr.
John Russell Wadleigh
John Sherrard Brittain Walker, Jr.
Nell Michael Weinreb
Richard Edward Williams
Bertie Harold Reginald Woolf
James Theodore Wulf
Thomas Frederick Wyatt
Robert Lee Wyener
Emil Conrad York
Bashir Ahmad Zikria

W Va.
Ill.
Md.
D.C.
D.C.
Va.
Pa.
Finland
Comp.
N.Y.
Hawaii
D.C.
Md.
Okla.
D.C.
Md.
Va.
Md.
D.C.
D.C.
Md.
D.C.
Va.
D.C.
Md.
Va.
D.C.
Ill.
D.C.
D.C.
Va.
Va.
D.C.
N.Y.
D.C.
D.C.
D.C.
D.C.
Md.
Pa.
D.C.
Calif.
D.C.
N.Y.
Va.
Afghanistan

JUNE 9, 1954

James Rowe Adams
Melrose Baxter Adams
Bianche Arvetta Anderson
Lillian Carole Ancell
Lucille Alberta Anstine
Anna Aylasian
(With distinction)
Barbara Adair Bailey
Huda Bakr
Joseph James Ball
Shirley Barlow
Donald Michael Barrick

Nebr.
D.C.
D.C.
D.C.
Pa.
D.C.
Va.
Iraq
Md.
Va.
D.C.

John Edward Bartsch, Jr.
Eleanor Frances Baudino
Edward Victor Bauer
Walter Lawrence Baumann
(With distinction)
John Henry Bang
(With distinction)
Joseph Francis Baland
David Carlton Barker
Ronald Jack Bortnick
James Walter Bowling
Elizabeth Corrine Brothers

Pa.
Md.
N.Y.
D.C.
Ill.
N.J.
Va.
D.C.
W Va.
Md.

Degrees Conferred

423

Ernestine Bain Brown	Texas	Carmel Martha Jones	Canal Zone
Nora May Irribagoe Brust	D.C.	(With distinction)	
John Daniel Buckingham	D.C.	Humphrey Francis Judson, Jr.	D.C.
Oscar Thomas Bucklew	W. Va.	Judith Ann Kaplan	D.C.
Frederick David Britt	D.C.	Marvin Stacey Kay	D.C.
Joseph Albert Camelio, Jr.	D.C.	Kay Jean Kacaw	Pa.
(With distinction)		James Jarvis Kennedy	Va.
Ian Philip Campbell	D.C.	Gary Kessier	N.Y.
(With distinction)		Samuel Jay Keyser	D.C.
Patricia Campbell	N.Y.	(With distinction)	
Antonio Casas	Venezuela	Rutha Diane Kneec	Md.
Susan Penetion Chaffin	Va.	Ormond Frederick Kippenburg	Md.
Anthony Nicholas Chance	Md.	Henry Patrick Kober, Jr.	D.C.
Peter Christie	Mass.	Dorothy Elizabeth Kudrowski	Pa.
Harold Glenn Claiborn	Md.	Dorothy Helen Kuebler	D.C.
Maryun June Clark	D.C.	(With distinction)	
Paul Matthew Colohan	D.C.	Samuel Irwin Kuntzel	D.C.
Carol Ann Colson	D.C.	Bernard Clement Kovach	D.C.
Roland R. Dallatore	Wis.	John Elias Kyriakos	Greece
Edward Harry Darcey	Va.	Joseph Wines Landis	D.C.
Alan Park Davitt	Va.	Jack Lane	D.C.
Alan Irwin Decker	Md.	Thomas Grover Leach, Jr.	Texas
James Armstrong Dent, Jr.	D.C.	Virginia Douglas Leetch	D.C.
John G. Deputis, Jr.	Va.	Miles Search Lefferts	Va.
Charles Robert Detweiler	D.C.	Jo Ann Levinson	D.C.
Kenneth Dale Duggin	Va.	Vincent Eugene Lind	Conn.
Adrienne Clare East	Va.	John Walter Liska	Md.
Lydia Lawrence Eccles	D.C.	Carolyn Froy Littlepage	D.C.
Zmaro Ecnomon	D.C.	John Marshall Littlepage, Jr.	Md.
Douglas Clifford Eising	D.C.	Clair Martin Loughmiller, Sr.	Md.
Barbara Jean Elam	Va.	Charles Edward Luley	D.C.
Ruth Marian Faro	Md.	Apirodite Marcotzin	D.C.
Enosie Therese Fay	Pa.	(With distinction)	
Harvey Saul Fenster	D.C.	Ormond Russell Maasch	Texas
James Hobson Ferguson	Va.	Alice Hope Maniatis	D.C.
Daniel Tobias Franklin	D.C.	Ruth Maniatis	D.C.
Ralph William Furrner	Va.	Richard Maury McCoy	Va.
Robert Eugene Gaddis	Md.	Isabel McGuirk	D.C.
Everson Mary Gannon	N.J.	Forrest Ross McGraw	Md.
(With distinction)		Josephine Marie Meers	Ind.
Marilyn Graser	Va.	Georgiana Kay Meersam	D.C.
Dorothy Dodge Glenn	Va.	John Louis Mikulich	N.Y.
Louise Ivan Gluskevich	D.C.	Lillian Lucy Milone	Pa.
Shirley Evelyn Goldstein	D.C.	Sanford Marvin Miller	N.J.
Esther Grab	Va.	Donald Lee Mills	D.C.
Carmen Braden Greene	Va.	Marilyn Ruth Mitchell	Va.
Marion Elaine Gritts	Okla.	Ann Tsuneko Murayama	Hawaii
Barbara Ann Guasco	D.C.	Sandra Lee Myers	N.C.
Frances Marie Haines	Md.	Margaret Jane Nichols	N.J.
(With distinction)		Nita Fay Nowlin	Tenn.
Rockford Norris Hamed	W. Va.	Maya Pazo	D.C.
Barbara Norris Harvey	Md.	Ralph John Packard	Va.
(With distinction)		Priscilla Taylor Palmer	Md.
Helen Jean Harveyotter	Md.	Joseph Paszotta	N.J.
John Henry Havemann	Pa.	Gerald Joseph Paparella	Pa.
George Russell Haymaker, Jr.	Va.	Judith Lorraine Perkins	N.Y.
Susan Olsen Haxues	Md.	Anne Margaret Piggot	D.C.
Patricia Collins Hazlett	Va.	Robert Simon Pizer	D.C.
Clonida Masiola Henderson	Idaho	Mildred Elaine Pons	Pa.
Jo Ann Henay	D.C.	Stanley Prusch	Md.
(With distinction)		Ramon Tison Purdy	D.C.
Monte Arnold Herman	D.C.	Raymond Benedict Rafferty	N.Y.
Edward Alton Hattery	D.C.	Candlyn Rose Rein	Md.
Carol Fyler Hatcher	D.C.	Lea Compton Richards	Va.
Marion Dale Hooper	D.C.	Robert Kendall Rochester	Va.
Shirley Frances Huff	D.C.	David Arthur Rodgers	D.C.
Henry Franklin Huff	Md.	Albert Steven Roslin	D.C.
Alfred Isabelle Hughes	D.C.	Roe Martin Rothgeb, Jr.	Va.
Ward Richard Hulburt	D.C.	Elizabeth Ruiz	Md.
Paul Allen Hynes	N.Y.	Leon Irving Salzberg	Va.
Catherine Jackson	D.C.	Joseph Salzer	Md.
Edward Lawrence Jaffee	Va.	Patricia Edine Sampson	D.C.
Henry Carl Jenkins	Fla.	Bernard Beryl Scheps	Va.

Patricia Louise Schick	Va.	Zola Lee Teter	Md.
Edward Semoman, Jr.	Va.	Eugene Sigourney Thayer	D.C.
Leonora Tema Shank	D.C.	Edward Garnet Thorpe	D.C.
(With distinction)		Clarence Lee Tipton	Md.
Leonard Jay Shapiro	N.Y.	Nancy Elizabeth Tyson	D.C.
Marga Silleris	D.C.	Anna Isabel Uhl	D.C.
Elizabeth Booth Silver	Mont.	Thomas L. C. Vail	Va.
Larry Bernard Silver	D.C.	Marian Von Ruden	Wis.
David Milner Silvernale	N.Y.	John William Walker	D.C.
Richard Joseph Sincoff	D.C.	Mabel Marie Walker	D.C.
Nancy Ada Smedley	Pa.	Frank John Walters	D.C.
Stuart Mayoh Smith	D.C.	Kathleen Patricia Weatherford	British West Indies
Alvin Lee Solomon	D.C.		D.C.
Mary Carla Sonntag	D.C.	Rosa Dahl Wiener	Va.
Virginia Elliott Spector	Va.	Ann Elizabeth Willey	D.C.
(With distinction)		Dale Branch Wilson	Va.
Marilyn Leanne Stagner	Va.	Howard Eugene Wilson	D.C.
Arnold George Edwin Stangohr	Va.	Gilda Joyce Wnekard	D.C.
Eugene Octave Sykes Stevenson	D.C.	Rita Anne Wtikan	D.C.
Allen Raymond Stackley, Jr.	D.C.	Barbara Elaine Wolin	Va.
Barbara Lynn Stuart	Md.	James Henry Wood, Jr.	D.C.
(With distinction)		Joseph Francis Worley	Mass.
Mary A. Stourdant	D.C.	Charles Malcolm Wyman	Md.
Richard Carroll Sullivan	Va.	George Wesley Young, Jr.	N.Y.
Patay Ruth Sumner	Ohio	John James Zimandanis	D.C.
James Edwin Swisher	Va.	Joenette Marie Zurlo	
Patricia Anne Taylor	Md.		

COLUMBIAN COLLEGE

BACHELOR OF ARTS

NOVEMBER 11, 1953

Mary Baptiste	Mass.	Charles Francis McGuire	Pa.
Lloyd Morris Barber	Ala.	Robert Cramton Moss	Mass.
Joseph Warren Blanton III	Fla.	Eleanor Mosskowitz	N.Y.
Robert Eugene Boley	D.C.	Anthony Thomas Mucciarone	Pa.
Jamie Reuben Broner	D.C.	Nelson Oertel	Va.
Frances Chavonius	D.C.	Donald Joslin Pearce	D.C.
Harry Edward Cullen	Ill.	(With distinction—Special honors in French)	Ill.
Mary Marguerite Davenport	D.C.	Charles Clinton Peterson	Va.
Priscilla Mabel Dow	Mich.	Curtis Carlisle Parris	D.C.
Mary Bedale Ellis	Pa.	Alfred Joseph Schweser	D.C.
Samuel Roy Flinn	Va.	Russell Lewis Sergeant	Va.
Suzanne Doune Hill	Va.	Florence Mood Smith	D.C.
Maxine Joan Saurel Israel	D.C.	Carol Mercer Thayer	R.I.
(Special honors in Speech)		George Edward Trainor, Jr.	Va.
Robert Theson Jones	Md.	Nancy Garrison Tucker	Md.
Danforth Joslin	D.C.	Robert Stephens Ware	D.C.
Ann Elizabeth Kline	Va.	Guy VanVorst Waterman	Nev.
Herbert Lanza Kotz	D.C.	(With distinction)	Va.
(With distinction)		Daniel Norman Whitmore	D.C.
Jew Chuck Lew	D.C.	Marcia Roessing Xenos	
Marie Terese Lutz	D.C.	Irvin David Yalom	
Gale Root McConachie	Kans.	(With distinction)	
(Special honors in Journalism)			

FEBRUARY 22, 1954

Nancy Jane Brown	Va.	Joseph Earl Flynn	D.C.
Frances Goddard Callaghan	D.C.	Benjamin Hill Gardner II	La.
Damon Nicholas Cordom	D.C.	Richard Sanborn Gibbs	D.C.
Theodore Francis Culp	D.C.	Jim William Gipple	Wash.
Philip Henri DeTurk	Md.	Bernice Elizabeth Goldberg	Md.
Sherwood Albert Drake	Mo.	John Honeycutt Hinrichs, Jr.	D.C.
Nancy Ellison Dwyer	D.C.	William Reed Howard	Neb.
Samuel Peter Favarella	Pa.	Edward James Hughes	Pa.

Ruth Lalor Jaskiewicz	Conn.	Elaine Ades Sachnoff	Ill.
Morton Lionel King	D.C.	Luis Rafael Sanchez	Puerto Rico
Gertrude Anne Komlenich	Ill.	Grace Henrietta Sawyer	N.C.
Elizabeth Walker Lane	D.C.	Anthony Harry Ross Santa	Va.
Walter Julius Larson	Ind.	(With distinction)	
Marys Louise Leese	D.C.	Betty Lou Shanks	Iowa
Edward Maloney	D.C.	(With distinction)	
Samson Masse	N.Y.	Leila Cohen Shapiro	D.C.
Caro Noonan McCall	Md.	Robert Miller Sherman	Texas
Thomas Joseph McCrone	Pa.	Janet Simpson	Ill.
Richard Vaughan McNamara	Iowa	Helene Carole Sirota	D.C.
Gabriel William McNamee	D.C.	Paula M. Stein	D.C.
(With distinction)		Janet Lee Steinberg	D.C.
Rita Mermelstein	D.C.	Fewson Graham Stephenson	N.Y.
Suzanne Middlebrooks	Texas	John Michael Stokas	Pa.
Elizabeth Jane Mitchell	Va.	Sylvester Adolf Terkoski	D.C.
Charles Henry Moffett, Jr.	Va.	Audrey Frances Thomas	D.C.
Ray M. Greco Morse	Md.	Glenn Eileen Weaver	D.C.
Harold Myers	Va.	Tanya Elaine Weisberg	D.C.
Joseph George Nott	Pa.	Mary Margaret Wilkinson	Va.
Dian Robinson Porter	Md.	Elma Williams	D.C.
Thomas Kelly Putter, Jr.	Tenn.	(Special honors in Journalism)	
(Special honors in Journalism)		Barbara Cohen Wolf	Md.
Jeanne Louise Rivoire	Ill.	(Special honors in Speech)	
James William Rutland	Va.		

JUNE 9, 1954

Joseph Henry Abel, Jr.	D.C.	Burton Seymour Epstein	D.C.
Saleya Abushady	N.Y.	Milbrey Lee Estes	D.C.
Ray Power Adamson	Ga.	(With distinction)	
Barbara Bachman	Va.	George Herbert Fahy	D.C.
James Leon Baldwin	Va.	Joan Ruth Feder	D.C.
Anne O. Dunwell Baughman	N.Y.	Joan Faye Federico	D.C.
James Herbert Bell	Va.	(With distinction)	
Hans Jack Berliner	D.C.	Edmund Henry Feldman	D.C.
Charles Reimon Berry	Texas	Judy Marilyn Foelak	D.C.
Carolyn Virginia Billingsley	Va.	(With distinction)	
Margaret Lynnette Birlford	Va.	Fred Fuchs	N.Y.
Phyllis Jane Blocher	Md.	Gay Fullerton	Va.
Roderick Hans Boen	D.C.	Catherine Louise Gainey	Va.
Loisette Boussemieault	Canada	Donald Grant Galdes III	Md.
(With distinction)		Robert T. Anthony Gieske	Va.
Donald Arthur Boltz	S.D.	Walter Edwin Gooch	D.C.
Samuel Vladimir Boor	Md.	Ellen Hendry Gordon	D.C.
Theresa Bell Bordwell	Pa.	Virginia Louise Grad	D.C.
Thomas Albert Brown III	N.J.	Elderthe Asher Gray	Ky.
(Special honors in Journalism)		Elizabeth Jane Griffith	D.C.
Brynnie Klara Buchmann	Md.	Jo Ann Gross	Va.
Linda Lee Cabron	Md.	Phyllis Valerie Hards	D.C.
(With distinction)		(Special honors in Journalism)	
William Morris Cain	Ind.	Phyllis Jacqueline Harte	D.C.
John James Campbell	Md.	Lyn Henderson	D.C.
Joel Harvey Canon	N.Y.	Charles Edwin Hesaltine, Jr.	Va.
Flora Jean Coleman	S.C.	Errol Downham Hill	D.C.
Joan Marshall Condee	D.C.	Shirley L. Hymowitz	D.C.
(With distinction)		Winifred Morgan Telling	N.Y.
Barbara Connolly	D.C.	Ethel Irma Johnson	Va.
Rebecca Anne Cotton	D.C.	Juliet Ann Johnson	Md.
Dezay Ann Destrakson	Va.	Robert Houston Jones	Mass.
Donald Scade Detwiler	D.C.	Harvey Douglas Kaplan	D.C.
Edward Peter Devine	Md.	Jerrold Jacob Katz	D.C.
Elise Sheila Dimmette	Md.	Roger Alexander Kaufman	D.C.
Ralph Thomas Douglass	N.J.	Donald Charles Keaveney	Md.
Frederic Alexander Doyle, Jr.	R.I.	B.S. 1942, Bowdoin College	
Myron Clarke Drall	Ind.	I.L.B. 1951, American University	
Arthur Sue Duvall	Va.	Kathryn King	Ohio
Barbara Harriet Edelachein	D.C.	Richard Gareth Kinsey	Md.
George Ellsworth	N.Y.	Sandra Lee Kishen	Va.
George Meade Emory	Wash.	Peter Marshall Koskern	Ga.
Ovlie James Emory, Jr.	D.C.	Ruth Dennis Koudan	D.C.
Helen Wiers Englert	Va.	Betty Fram Korpeck	Md.

George Anest Koutras	D.C.	Everette Severe	Md.
Eleanor Rapp Krone	D.C.	Junista Harriet Shaw	D.C.
Sophie Hornstein Ladimer	N.Y.	Tom Albert Silberman	Md.
Elizabeth Mary Lane	Va.	Nathaniel Edward Simpson	D.C.
(Special honors in Journalism)		Ellen Barbara Sincoff	D.C.
Gladys Gertrude Leech	Va.	(With distinction)	N.Y.
Marvett Agathe Lentz	Pa.	Morley Jay Slot	D.C.
Charlotte Joan Levy	D.C.	Claudia Smart	
Louise Elizabeth Li	Va.	(Special honors in Journalism)	D.C.
Katherine Earle Looker	Va.	Carol Elaine Sponheim	
Lawrence Jennings Lovenstein II	D.C.	(Special honors in Economics)	D.C.
Saul Myron Lucha	N.J.	Helen Anna Statts	D.C.
Ann Hardin Lyle	Va.	Lois Bildman Stein	Iowa
Nancy Mann	D.C.	Melvin Struthers, Jr.	Va.
James Russell Marshack	Va.	Walter James Stuart	
Shirley Ann Massie	Va.	B.S. 1934, U.S. Naval Academy	Ill.
Richard Lawrence Matthews	D.C.	Helen Lorraine Sunderman	Va.
Melvin Earl Mattson	Va.	Virginia Ashby Taylor	Va.
Lawrence Daniel McCarthy	D.C.	Beverly Ellen Teeter	Va.
Nell Louise McCleashan	Pa.	Grace Augusta Thada	Va.
Donald Anthony McDonnell	D.C.	William Robert Throckmorton, Sr.	Va.
Nan Honora Katherine McKinney	Mich.	Janet Tanzman Tickin	Md.
Trent Otto McPherson, Jr.	Md.	Carolyn Trescott	D.C.
Barbara Jean Meserow	D.C.	Charles Hilary Troshinsky	Ill.
Harold Enah Meserow	D.C.	Mary Carolyn Turner	Mexico
(With distinction)		Joseph August Vaughan	Md.
Stanley Ross Miller, Jr.	Md.	Anna Maybelle Voris	D.C.
George F. Mills	Md.	Eleanor Florence Walsh	Md.
Nancy Nield Mitchell	D.C.	Laurance Washington Walton	Va.
James Edward Moore	D.C.	Frederick Burdett Warder, Jr.	Md.
Eileen Nagel	N.Y.	Louis Frederick Warrick, Jr.	D.C.
Richard Barr Oason	Fla.	Nell Weaver	Ala.
Barbara Miller Outry	D.C.	Lula May Wedgeworth	
Anne Ruffin Page	D.C.	A.B. 1928, The George Washington	D.C.
Carlene Louise Parker	Mo.	University	D.C.
Dorothy Ellen Peters	D.C.	Mary Cohen Weitzman	Md.
Ann Louise Reagan	D.C.	Michael Crawley Welch	Va.
Gloria Bolling Reeside	D.C.	George Erhardt White	D.C.
Robert Stanley Robertson	Va.	Audrey Bathke Whiteley	
B.S. 1929, U.S. Naval Academy		Burton Harold Wolfe	Va.
James Arthur Robinson	Okla.	(Special honors in Journalism)	D.C.
Joan Charles Roddy	D.C.	Ronald Harlan Woody, Jr.	
Aida Rodriguez-Hernandez	Mexico	Barbara Anne Worley	Va.
Francis William Savage	D.C.	(With distinction)	D.C.
Lorenz Philip Schrenk	D.C.	Kharmin Hudson Young	
Martha Jane Scott	Va.	Mirga Zita Zadeikis	
Herbert Robert Seiden	N.Y.	(With distinction)	

BACHELOR OF SCIENCE

NOVEMBER 11, 1953

John Claston Cherry, Jr.	Va.	Daniel Raymond Kane	D.C.
Richard Hodges Funk	Kans.	John Albert Lytle	D.C.
David Edward Icenhower	D.C.	Jane Lee Moffatt	D.C.
Mary Ann Joslyn	D.C.	Richard Marvin Wolf	

FEBRUARY 22, 1954

Vincent Joseph Bagdon	Mich.	Victor Edward Grob	D.C.
Jack Wayne Collier	Va.	Nicholas Karayianis	D.C.
Dwight Lee Gravitte	Va.	Thomas Arthur Roberts	D.C.

JUNE 9, 1954

Morton Altschuler	D.C.	Richard Frank Butler	D.C.
Bernard Alvin Band	D.C.	Given Wood Cleek	Va.
Andrew Bodgan	Pa.	Robert Chester Colbert	Md.

Degrees Conferred

427

Andrew Truman Cole	Va.	Robert Carpenter Macon	D.C.
Stray Harry Economon	D.C.	Joseph Michael Marchesano	N.J.
Warren William Eisenberg	N.J.	Lala Wanda Mathers	Va.
Thomas Albert Farley	D.C.	Luia Raul Otero-Vilardelo	Puerto Rico
(With distinction)		Robert Hammond Reed	Colo.
Isa Aziz Fawal	Jordan	Gerald Ivan Rozansky	D.C.
Patricia Morse Federico	D.C.	Robert Gordon St. Clair	Va.
(With distinction - Special honors in Chemistry)		Edward Joseph Salins	D.C.
Lola Patricia Gernova	D.C.	Jerome Lewis Sandler	D.C.
David Elliott Goldberg	Md.	Michael Schmookler	D.C.
(Special honors in Chemistry)		William Newton Shaddix, Jr.	N.Y.
Sylvan Lippman Goldin	D.C.	Henry Shmabukuro	Hawaii
Phyllis Sandra Greenberg	D.C.	Walter Allen Shropshire, Jr.	D.C.
Doris Sanford Hadley	Pa.	Julian Lee Siegel	Md.
Joe Benson High	Fla.	Jere Bart Stern	D.C.
Anthony Inglis	D.C.	Ann Reed Sweeney	D.C.
Joseph Wayland Linhart	Va.	Clark Gibbons Webster	Md.
Gerald Ross Lynch	D.C.	Joanne Patricia Winslow	Va.
(With distinction)		Basbir Ahmad Zikria	Afghanistan

MASTER OF ARTS

NOVEMBER 11, 1953

Patricia Florence Coulter	Mich.	James Michael McLynn	D.C.
A.B. 1945, University of Michigan		A.B. 1950, The George Washington University	
Elin N. Crupain	N.Y.	Frances Smith Patterson	Nebr.
A.B. 1946, Brooklyn College		A.B. 1955, College of William and Mary	
Bart Jacob Epstein	Md.	Carl Herman Pfuntner	Fla.
B.S. 1948, Cornell University		A.B. 1948, The George Washington University	
Paul Austin Harris	Okla.	Robert Henry Randall, Jr.	Md.
A.B. 1949, The George Washington University		B.C.E. 1941, The George Washington University	
Andrew Carson Hilton	Miss.	Daniel Roxon	Md.
A.B. 1952, University of Maryland		A.B. 1946, Brooklyn College	
John Frederick Hudson	Md.	Lilly Katherine Tauber	D.C.
A.B. 1951, The George Washington University		A.B. 1947, Peter Pasmany University, Hungary	
Louisa Elizabeth Jones	N.J.	Elizabeth Rouse Warriner	D.C.
A.B. 1950, Bryn Mawr College		A.B. 1954, The George Washington University	
B.D. 1942, Union Theological Seminary		Harland Walter Westermann	Va.
France Amelie Karibjamaan	Va.	A.B. 1950, The George Washington University	
A.B. 1941, New Jersey State Teachers College	D.C.		
Laurence Kashdan	D.C.		
B.S. 1947, University of Chicago			
Diana Hanbury King			
A.B. 1948, University of London			
Ivan Gerald Loric			
A.B. 1949, Brown University			

FEBRUARY 22, 1954

Dorothy Ann Allinger	Md.	Richard Lehtsch	N.Y.
A.B. 1951, The George Washington University		A.B. 1950, The George Washington University	
Herbert Benham	Md.	Albert Lawrence Lloyd Jr.	Va.
B.S. 1950, Johns Hopkins University		A.B. 1951, The George Washington University	
James Francis Econom	Md.	Robert John Mangold	N.Y.
A.B. 1950, The George Washington University		A.B. in Ed. 1951, The George Washington University	
Samuel W. Greenhouse	Md.	Ethel Agnes Mullett	Va.
B.S. 1953, College of the City of New York		B.S. in Ed. 1946, Brooklyn College	
Patricia Alice Johnson	D.C.	Walter Francis Murphy, Jr.	S.C.
A.B. 1948, The George Washington University		A.B. 1950, University of Notre Dame	

Simplicio Cuyno Parojinog, Jr. A.B. 1951, The George Washington University	Md.	Leonard Small A.B. 1949, The George Washington University	Md.
Jesse Edward Ridgeway A.B. 1946, The George Washington University	Va.	Thomas Alfred Stanhope A.B. 1950, University of Maryland	D.C.
Margaret Brinkerhoff Shane A.B. 1948, The George Washington University	D.C.	Lowell Stanley Swortzell A.B. 1951, The George Washington University	D.C.
George William Shelly A.B. 1951, The George Washington University	N.J.	Marjorie Parks Valentine A.B. 1949, University of Chattanooga	Fla.

JUNE 9, 1954

Arthur Sparrow Banks A.B. 1951, Cornell University	D.C.	Eleanor Sather Lowman A.B. 1949, Stanford University	D.C.
Abraham Bluestone A.B. 1947, The George Washington University	D.C.	Elise Wootton Moale A.B. 1953, Goucher College	Md.
Florence James Bruce Briggs A.B. 1955, The George Washington University	D.C.	Lloyd Corneal Rarr A.B. 1950, University of Alabama	Va.
Carl Charlock A.B. 1951, The George Washington University	D.C.	Anne de Shazo Robertson A.B. 1951, Pennsylvania College for Women	D.C.
Eusebe Andre Dallaire A.B. 1951, The George Washington University	D.C.	Santiago Rodriguez B.S. 1952, North Dakota Agricultural College	D.C.
Daniel William Dembrow B.S. 1942, The George Washington University	Md.	Jeannette Stathopoulos A.B. 1952, The George Washington University	Md.
James Arthur Griffin A.B. 1953, The George Washington University	Va.	Joy Dancia Stiller A.B. 1949, Hunter College	D.C.
William Herman Henderson, Jr. A.B. 1950, The Citadel	N.C.	James Justin Thackara A.B. 1956, Harvard University	Va.
Wine Yam Hoi A.B. 1950, The George Washington University	D.C.	Charles Willard Warner A.B. 1948, College of William and Mary	Mass.
Grattan George Irwin, Jr. A.B. 1947, West Virginia University	W.Va.	Lewis Jasper Winter B.S. 1949, The George Washington University	

MASTER OF SCIENCE

NOVEMBER 11, 1953

Aaron David Alexander B.S. 1948, College of the City of New York	N.Y.	Ian Kenneth Ross B.S. 1952, The George Washington University	England
Curtis Leslie Brown Henry Andrew Droll B.S. 1942, The George Washington University	Md. Pa.	William Wirsing Tullner A.B. 1937, Temple University	Md. Fla.
John Wadsworth Moore B.S. 1946, Randolph Macon College	Md.	Ernest Randolph Whitcomb B.S. 1950, University of Florida	Ill.
		Thomas Edwin Wilson B.S. 1952, University of Illinois	

FEBRUARY 22, 1954

Elgin Adams Dunnington, Jr. A.B. 1950, The George Washington University	Md.	Julian Kramer B.S. 1947, College of the City of New York	Md.
James Louis Gargan B.S. 1950, The George Washington University	D.C.	John George Tiedemann A.B. 1951, The George Washington University	D.C.
Nathan Kaplan B.S. 1949, College of the City of New York	N.Y.		

JUNE 9, 1954

Abdul Kadir Aziz B.S. 1951, Wilson Teachers College	Afghanistan	Ruth Iris Geran A.B. 1944, American University	Va.
Frederick Merkle Bayer B.S. 1948, University of Miami	Fla.	Edward Walter Jylkka B.S. 1951, The George Washington University	D.C.
John Dale Bultman B.S. 1950, The George Washington University	D.C.	Leonard David Szalaw B.S. 1949, College of the City of New York	D.C.
Thomas Nelson Carter B.S. 1951, American University	D.C.	Greenville Rush Strother B.S. 1941, Virginia Polytechnic Institute	Va.
Milton Burns Cole A.B. 1952, The George Washington University	Md.	Clarence Francis Szwed B.S. 1952, The George Washington University	Pa.
Alan Clark Duckworth B.S. 1951, The George Washington University	Va.	Henry Snowden Valk B.S. 1951, The George Washington University	Md.
Harold Fred Earle B.S. 1951, University of Maryland	Md.	Edmund Anthony Zaremba B.S. 1950, Wilkes College	Pa.
Roy Lester Evans B.S. 1949, Indiana Central College	Md.		

THE SCHOOL OF MEDICINE

DOCTOR OF MEDICINE

JUNE 9, 1954

Harold Franklin Albert B.S. 1950, Mendenhall College	Pa.	James Arthur Danford B.S. 1950, University of Dayton	Ohio
David Carl Applegate A.B. 1950, University of California	Calif.	Martin Thomas Davis B.S. 1948, Rensselaer Polytechnic Institute	Conn.
Richard Merrill Armstrong B.S. 1950, University of Idaho	Idaho	M.S. 1950, The George Washington University	
Habeeb Basbous B.S. 1947, Howard University	Md.	Stephen William Dejter (With distinction)	Md.
M.S. 1948, Ph.D. 1950, The George Washington University		A.B. 1950, Western Maryland College	
Robert James Bahr (With distinction)	Wis.	Edward Alley Downs (With distinction)	N.J.
Solomon Eftem Barr (With distinction)		A.B. 1950, Harvard University	
A.B. 1951, The George Washington University	D.C.	Donald Quentin Ekman Albert Frederick Esch	Md. D.C.
Joseph Bloom A.B. 1949, Brown University		A.B. 1949, A.M. 1950, The George Washington University	
Frederick G. Blum, Jr. B.S. 1950, University of Wisconsin	R.I.	Ted Lawrence Fluckiger B.S. 1950, Western Reserve University	Ohio
Arnar Cephas Boone A.B. 1950, Stanford University	Wis.	Stephen Evangelos Fuchios B.S. 1949, University of Maryland	Md.
Morris Alexander Bowd B.S. 1950, Washington State College	Calif.	John Francis Giddy A.B. 1949, Park College	Mo.
Robert Graham Bullock A.B. 1950, Johns Hopkins University	Wash.	B.S. 1952, University of Missouri	
Charles Burey B.S. 1950, Western Reserve University	Va.	David Kellner Gansberg A.B. 1951, The George Washington University	Md.
Harry Nelson Carlton B.S. 1947, M.S. 1950, The George Washington University	Ohio	John Warton Harris, Jr. A.B. 1950, University of Wisconsin	Wis.
James W. Chaney A.B. 1949, Catholic University of America	Md.	Cornelius John Hayes (With distinction)	Conn.
M.S. 1950, The George Washington University	D.C.	A.B. 1950, Yale University	D.C.
Progenes Culesas A.B. 1951, The George Washington University		Jean Robert I. Heult A.B. 1950, Johns Hopkins University	
Robert Herman Crabtree	D.C.	Robert Monroe Heywood B.S. 1950, University of Wisconsin	Wis.
		Herbert Hulin Hicks A.B. 1950, Harvard University	Miss.
		Richard Edward Horton	Md.
	Idaho	Vernon Neal Hook	Calif.

William Matthew Kane, Jr. A.B. 1950, College of the Holy Cross	Md.	Daniel Lamont Seckinger II A.B. 1951, The George Washington University	D.C.
Frank Wilson Kiel A.B. 1950, University of Pittsburgh	Va.	Otto Ernst Senft A.B. 1943, Wartburg College	Iowa
Michael James Kirk Paul Raymond Knox (With distinction)	D.C. Calif.	B.D. 1946, Wartburg Theological Seminary	Idaho
A.B. 1950, University of California	N.Y.	Boyd K. Simmons A.B. 1950, Brigham Young University	D.C.
Norman Clifford Kramer B.S. 1948, The Citadel M.S. 1950, The George Washington University	N.Y.	Lawrence Robert Singer (With distinction) B.S. 1950, The George Washington University	Va.
Herbert Kritzer A.B. 1948, Syracuse University	N.J.	Richard Lee Slack B.S. 1950, West Virginia Wesleyan College	Pa.
A.M. 1949, University of Pennsylvania	Pa.	Edward Joseph Stachowiak B.S. 1951, University of Pittsburgh	W.Va.
Frederick Henry Kuitens B.S. 1950, Union College	N.Y.	Oscar Cebren Stine A.B. 1950, Oberlin College	Okla.
Leon Robert Levatsky B.S. 1951, Muhlenberg College	N.Y.	Rodney Alan Stone B.S. 1950, University of Tulsa	Wis.
Martin David Ludsky B.S. 1950, The George Washington University	Fla.	James Russell Stormont (With distinction)	Ill.
Charles Long, Jr. Willard Frank Machle, Jr. A.B. 1950, Harvard University	Mich.	Edward Chiles Sweet (With distinction) A.B. 1951, The George Washington University	Maine
John Gage Mahaney B.S. 1949, Michigan State College	N.J.	Carlton Edward Swett (With distinction)	Fla.
John William Marquis A.B. 1950, Carleton College	Calif.	A.B. 1950, Bowdoin College	Calif.
Robert Carl Martin A.B. 1950, University of California	Pa.	Herbert Bradley Taylor B.S. 1950, The George Washington University	Ohio
John Robert Mazero A.B. 1951, The George Washington University	Pa.	John Milton Thorkelson A.B. 1949, San Diego State College	Va.
Albert John Miele B.S. 1950, Georgetown University	D.C.	Howard Erwin Ticktin (With distinction) A.B. 1950, The George Washington University	Ohio
Albert Jay Modlin B.S. 1948, M.S. 1949, The George Washington University	Md.	Harold Adrian Tuch B.S. 1950, University of Cincinnati	Calif.
Roger Merritt Morrell B.S. 1950, Haverford College	Pa.	Samuel Wall B.S. 1950, Whitworth College	N.J.
Ruth Anne Oastel B.S. 1950, University of Maryland	Md.	Robert Edward Wellwood (With distinction)	N.J.
Barber Clayton Palmer, Jr. A.B. 1950, Dartmouth College	Md.	A.B. 1950, Columbia University	N.J.
Roger West Parkinson B.S. 1951, Brigham Young University	Mo.	Charles Barton Whitlock	N.J.
John Frederick Pauly Richard Coleman Rhame (With distinction)	N.Y.	Jack Herbert Wilson A.B. 1950, University of Oklahoma	N.J.
A.B. 1950, Princeton University	Calif.	Edward Wilmont Youngblood A.B. 1950, The George Washington University	
Tom Witten Robinson A.B. 1949, Occidental College	Ind.		
Leslie Elwood Sanders A.B. 1949, Franklin College of Indiana			

THE LAW SCHOOL

BACHELOR OF LAWS

NOVEMBER 11, 1953

John Francis Ahern B.S. 1949, Lehigh University	Pa.	Donn Edward Casaty A.B. 1950, The George Washington University	Utah
Seymour Berry A.B. 1951, The George Washington University	Md.	Ernest Jerome Coniskey B.S. in F.S. 1950, Georgetown University	Ill.
James Vernal Brown A.B. 1950, Morris Harvey College	W.Va.	Louis G. Craig A.B. 1951, West Virginia University	W.Va.
Salvatore Francis Cassetta A.B. 1951, San Jose State College	Calif.	William Palmer Crandall	Md.

Degrees Conferred

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Robert Brighton Crouch B.S. 1949, University of Idaho	Idaho	Karl Anthony Ohralik B.S. 1948, Ohio State University	Ohio
James Worthington Crowley A.B. 1950, The George Washington University	Tenn.	William Pincus A.B. 1941, Brooklyn College	Md.
Sidney Theodore Daniel A.B. 1942, New York University	Va.	A.M. 1948, American University	N.C.
John G. Drake B.S. 1950, American University	Va.	William Neison Puett John Joseph Quill	Conn.
John Walker Folini A.B. 1947, Yale University	Va.	A.B. 1950, Ohio Wesleyan University	Pa.
Richard Fleury Generelly Francis Raymond Hammill, Jr. A.B. 1948, University of Rochester	D.C.	Joseph Radko A.B. 1950, Wilkes College	Pa.
Thomas Norman Kindness A.B. 1951, University of Maryland	N.Y.	Julian Carroll Rentro B.S. in Aero. Eng. 1948, University of Michigan	Fla.
Jerome Kraus A.B. 1942, University of Chicago	Md.	Robert Dale Rolander B.S. 1950, University of Colorado	Kans.
B.S. in E.E. 1947, University of Illinois	Md.	Robert Frank Ruemeli B.S. in M.E. 1943, Washington University	Mo.
Raymond Franklin Lippitt B.M.E. 1949, The George Washington University	Md.	Eugene Sabol B.Chem.E. 1950, Rensselaer Polytechnic Institute	N.Y.
Robert Eugene Lyle A.B. 1950, The George Washington University	Texas	Eliot Siskind A.B. 1948, Johns Hopkins University	Md.
Samuel Shepard Dennis Marsh A.B. 1948, Yale University	D.C.	Richard Glenn Stephens B.S. in E.E. 1948, Purdue University	Ind.
Licence 1950, Graduate Institute of International Studies, Geneva, Switzerland	D.C.	Milton David Stewart A.B. 1941, New York University	N.Y.
Harry Robert Martin A.B. 1946, University of Puerto Rico	D.C.	M.S. 1942, Columbia University	D.C.
Charles Eugene Metcoulano Dinu Alexandescu Muresianu A.B. 1949, M.C.L. 1945, University of Bucharest	D.C.	Edwin Tillman Stirling B.S. 1951, The George Washington University	Calif.
Edward George Najaiko B.S. 1946, University of Pennsylvania	D.C.	Richard Tucker Sykes (With distinction)	Va.
Byard Gann Nilsson B.S. in E.E. 1950, University of Utah	Pa.	Ralph Henry Vogel B.S. 1946, Harvard University	Ky.
David Pierre Orden B.S. in E.E. 1950, Union College	Utah	Joe Edward Waters B.S. in F.S. 1950, Georgetown University	Va.
	N.Y.	Norman Ariel West A.B. 1949, University of Richmond	Va.
		Philip Brand Yeager A.B. 1950, University of Arizona	

FEBRUARY 22, 1954

Carl Wilfred Baker B.S. 1948, Ohio State University	D.C.	Edward George Gruis B.S. 1949, M.S. 1951, Purdue University	Ind.
Ruth Stone Barbee Frederick James Bear B.S. in H.A. 1947, Miami University	Md.	Dr. en Droit 1950, University of Lyons	
Leonard Belkin B.M.E. 1950, Cooper Union	Va.	George Latham Harris B.S. 1947, U. S. Naval Academy	Md.
Irling John Casey A.B. 1946, Brown University	D.C.	John Henry Hesik A.B. 1941, Pennsylvania State College	D.C.
Dorcas Tenny Corbin B.S. 1950, St. Lawrence University	N.Y.	A.M. in Govt. 1951, The George Washington University	
Joseph Warren Darling B.S. 1941, Harvard University	N.Y.	George Edward Hutchinson A.B. 1951, The George Washington University	D.C.
M.B.A. 1934, University of Pennsylvania	Fla.	Lee Farnum Johnson, Jr. A.B. 1951, University of Colorado	Va.
Francis Martin De Caro A.B. 1951, Syracuse University	N.Y.	Norman William Jones B.S. 1948, University of Scranton	Pa.
Robert Edward Delahanty B.C.E. 1948, University of Louisville	Ky.	Dee J. Kelly A.B. 1950, Texas Christian University	Texas
Robert Carroll Dysland Francis John Gilmore A.B. 1951, Georgetown University	Md.	Fred Paul Kontka B.S. in M.E. 1942, University of Rhode Island	R.I.
Lela Barrett Goodson A.B. B.S. 1947, University of Oklahoma	Md.	Robert Allen Low A.B. 1941, Stanford University	N.Y.
Richard Leroy Greener A.B. 1950, University of Tennessee	Okla.	Daniel Walter Martin Emmett Hiram Nanna, Jr. A.B. 1950, University of Maryland	Md.
	Utah		

John Vincent Regan	D.C.	Richard Carlisle Steffley	Va.
B.S. in E.E. 1950, Tufts College		A.B. 1943, Roanoke College	N.Y.
Robert Owen Richardson	Mo.	Joseph Stitelman	
B.S. 1946, Drury College		B.S. in E.E. 1934, Cooper Union	Tenn.
Miguel Juan Rios-Lugo	Puerto Rico	Daniel Kidder Trevino, Jr.	Texas
A.B. 1951, The George Washington University		B.B.A. 1948, University of Texas	Wis.
Terrell Louis Ruhlman	Va.	Arnold Isidor Weber	
B.S. in Ch. Eng. 1949, Pennsylvania State College		Ph.B. 1949, Marquette University	
John Clifford Ryan	Va.	A.M. 1950, Harvard University	Md.
A.B. 1947, Iona College		Michael Wolf Werth	
Joseph Maxim St. Amand, Jr.	Ind.	B.S. 1948, Illinois Institute of Technology	Md.
B.S. in E.E. 1949, Purdue University		Fairland Henry Wetherbee	Md.
Edwin Giltner Salyers	Ky.	Harry F. Wickline	D.C.
B.S. 1951, Lincoln Memorial University		Charles Latimer Wilkes	
Orie Seltzer	Md.	A.B. 1950, Dartmouth College	D.C.
A.B. in Govt. 1951, The George Washington University		James Claiborne Wilkes, Jr.	D.C.
Jacob Shuster	Md.	A.B. 1950, Dartmouth College	
B.M.E. 1949, College of the City of New York		Zeb Leopold Wolf	Va.
Milton Joseph Socolar	Md.	B.S. 1951, Northwestern University	
B.S. 1950, University of Maryland		Lloyd Lynn Zickert	N.J.
Charles E. Spence, Jr.	Idaho	B.S. in M.E. 1950, Purdue University	
A.B. in Govt. 1950, The George Washington University		Herman Joseph Ziegler	Conn.
Ralphine Ronald Staring	Oreg.	A.B. in Govt. 1951, The George Washington University	
A.B. 1957, University of Oregon		Howard Francis Zorski	
A.M. 1941, Louisiana State University		B.S. 1950, University of Maryland	

JUNE 9, 1954

Caliste Jay Alster	Ill.	Robert Emerson Eastman	Calif.
B.S. 1948, Massachusetts Institute of Technology		B.S. 1946, U. S. Naval Academy	N.Y.
Walter Donald Ames	N.Y.	Eugene Brady Fallon	Mich.
B.S. 1945, Pennsylvania State University		B.S. 1944, U. S. Naval Academy	
Matthew Babinski	D.C.	William Leo Fisher	R.I.
B.S. 1949, Worcester Polytechnic Institute		B.Ch.E. 1951, University of Detroit	
Keith Roger Bean	Utah	Rufus Matteson Franklin	Mass.
B.S. 1951, University of Utah		B.S. 1947, Massachusetts Institute of Technology	
Daniel Blum	D.C.	Richard Austin Gaudet	Texas
B.M.E. 1944, College of the City of New York		B.S. in M.E. 1947, University of Rochester	
Harry Elton Braddock	Md.	Thomas Jefferson Greer, Jr.	Md.
B.S. 1945, U. S. Naval Academy		B.S. in Eng. 1950, The George Washington University	
Frederick Godfrey Bremer	Md.	Richard Iran Gulick	Va.
B.S. in Com. 1948, University of Notre Dame		B.S. 1945, U. S. Naval Academy	
Charles Stuart Broad	Minn.	Marion Edwyn Harrison II	Dol.
A.B. 1950, University of Minnesota		A.B. 1951, University of Virginia	Wyo.
William I. Brooks	N.Y.	Martine Aloysius Hartnett III	
B.S. 1941, Brooklyn College		A.B. 1951, University of Delaware	
Frederick William Brown	N.Y.	Donald Eugene Holben	Va.
B.S. 1948, U. S. Naval Academy		B.S. 1945, U. S. Naval Academy	
Stella M. Bayarowicz	Ohio	Elmer Wilson Honsbach	Va.
B.B.A. 1945, Western Reserve University		Auzville Jackson, Jr.	Md.
Frank Morris Chapper	D.C.	B.S. in Met. Eng. 1950, Virginia Polytechnic Institute	
John William Combs	Maine	Fred Carl Jana, Jr.	Conn.
A.B. 1951, Bowdoin College		B.S. 1951, University of Maryland	
John Henry Cragoe	D.C.	Leonard Albert Jaskiewicz	Md.
A.B. 1950, The George Washington University		A.B. 1949, University of Connecticut	
Stanley Thomas Czajkowski	Del.	Marshall Peyton Johnson	Pa.
B.S. 1951, University of Delaware		B.S. 1951, University of Maryland	
Elwood McDonald Dunn, Jr.	N.C.	Neil Bernard Kabatchnick	N.J.
B.S. in Cam. 1941, University of North Carolina		B.S. 1950, University of Scranton	
		Alfred Howard Kaye	
		A.B. 1951, The George Washington University	

Degrees Conferred

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Robert Alexander Kincaid B.S. 1938, Hampden-Sydney College	W.Va.	John Ascum Quisenberry A.B. 1948, Harvard University	Ill.
Eugene John Kinderman B.S. 1931, University of Illinois	Ill.	Albert Walton Rinchart B.Arch. Eng. 1949, Catholic University of America	Md.
Gordon Robertson Kindness A.B. 1938, University of Maryland	Md.	Albert Ravera B.S. in Bus. Ind. Mgmt. 1952, American University	N.M.
Ralph Henry Kline A.B. 1951, The George Washington University	Pa.	Neil Hersen Rose B.S. in M.E. 1949, Northwestern University	Va.
James Owen Knotts III A.B. 1949, University of Maryland	Md.	Daniel Michael Ross A.B. 1946, A.M. in Govt. 1948, The George Washington University	Pa.
Arthur Nicholas Klein B.S. in Eng. 1949, Case Institute of Technology	Pa.	Irving Jacob Rotkin B.S. in M.E. 1946, Virginia Polytechnic Institute	Md.
Alvin Julien Kushner A.B. 1951, University of Maryland	Md.	Louis Leonard Ruben A.B. 1951, The George Washington University	D.C.
Edward John Laffin Robert Samuel Landsman A.B. 1951, The George Washington University	Calif. Va.	Theodore Jacob Schattner B.B.A. 1941, College of the City of New York	N.Y.
James Joseph Laux B.S. 1948, Syracuse University	Va.	Edward Schmeltzer A.B. 1950, Hunter College	N.Y.
Edward Booker Lavne, Jr. A.B. 1951, University of Maryland	D.C.	James Lee Scholer B.S. 1947, Webb Institute of Naval Architecture	Wash.
Robert Blair Letz A.B. 1949, Dickinson College	Pa.	Albert Louis Sewler, Jr. B.S. 1950, Iowa State College	Va.
Alfred Charles Marmor Benjamin Franklin Marsh A.B. 1950, Ohio Wesleyan University	N.Y. Ohio	John Michael Siemen B.S. 1950, University of Wisconsin	Wis.
William Carlton McBride B.S. 1948, University of Maryland	Del.	Grady Fay Smith (With distinction)	Ga.
Charles Edward McGee Ed.B. 1944, Northern Illinois State Teachers College	Md.	Malcolm Searle Stevenson A.B. 1950, Bowdoin College	Maine
William Butler McKinney B.C.E. 1951, University of Maryland	Md.	S. Grant Stewart B.S. 1954, University of Nebraska	Okla.
Gerald Joseph Miller A.B. 1952, The George Washington University	D.C.	Daniel Gerald Taylor A.B. 1947, Salem College	W.Va.
Robert Vincent Nally A.B. 1950, St. Francis College	Pa.	Gary Lloyd Theurer B.S. 1951, Utah State Agricultural College	Utah
Robert Martin Neal A.B. 1948, A.M. 1949, Emory University	Ga.	Frank Preston Tipton B.S. in B.A. 1941, University of Georgia	Ga.
Edward James Norton A.B. 1948, Columbia University	D.C.	Richard Finloe Vernon A.B. 1949, University of Oklahoma	Okla.
Alice Louise O'Donnell A.B. 1952, State College of Washington	Wash.	Allen Gardner Weise B.S. 1945, The George Washington University	Md.
Jack Oliver Patrick A.B. 1952, State College of Washington	Wash.	Raymond Arthur Westcott Harold Walman B.S. 1942, College of the City of New York	Va. N.Y.
Ira Hersey Pease A.B. 1951, The George Washington University	Md.	John Grant Wright B.B.A. 1945, Southern Methodist University	Va.
Arthur Lewis A.B. in Govt. 1948, The George Washington University	Md.	Philip Max Zeidner	N.Y.
Roger Pomeroy A.B. 1942, University of Michigan	Md.		
Norman Anthony Ponce A.B. 1950, University of New Hampshire	N.H.		
James Travis Price	Tenn.		

JURIS DOCTOR

NOVEMBER 11, 1953

George Herbert Patrick Bursley B.S. 1946, U.S. Coast Guard Academy	D.C.	William Alquin Granberry B.L.S. Eng. 1949, Georgia Institute of Technology	Ala.
Constance Louise Byron A.B. 1951, University of Virginia	Md.		

Lloyd Allen Heneveld B.S. in E.E. 1950, University of Michigan	Mich.	John Paul Obaraki H.B. 1945, U. S. Coast Guard Academy	Va.
David Philip Kelley B.S. in E.E. 1949, Lehigh University	D.C.	Milton Maurice Peterson B.S. 1940, Central Michigan College of Education	
Raymond Joseph Kenay B.S. in Chem.E. 1950, University of Oklahoma	N.Y.	M.S. 1942, University of Michigan	D.C.
Clarence Turner Kipps, Jr. B.S. in B.A. 1951, American University	Va.	Marvin Clarence Soffen B.Chem.E. 1949, Cornell University	D.C.
William Joseph Kirkley B.S. 1946, U. S. Coast Guard Academy	Va.	Rowena Weiss B.Chem.E. 1949, Catholic University of America	
James Byron McIntyre A.B. 1951, Morris Harvey College	W.Va.		

FEBRUARY 22, 1954

Donald Earle Bilger B.S. 1951, University of Colorado	Va.	Matthew Charles Thompson B.S. in Ch. Eng. 1949, Iowa State College Agriculture and Mechanic Arts	Va.
Barbara Rugen Evans A.B. 1943, College of Wooster	Va.		
Orval Howard Hansen A.B. 1950, University of Idaho	Idaho		

JUNE 9, 1954

Yehuda Hillel Abrams A.B. 1952, The George Washington University	Md.	Walter Murphree McGinniss B.S. 1946, U.S. Naval Academy	Fla.
Glenn LeRoy Archer, Jr. A.B. 1951, Yale University	Md.	Sidney Nathan Rosenfeld B.S. in M.E. 1951, University of Maryland	Va.
Francis Joseph Crowley B.S. 1948, Norwich University	Vt.	Edwin Roy Schneider A.B. 1948, University of Michigan	Mich.
Richard Joseph Fay A.B. 1951, College of the Holy Cross	N.J.	Joseph Morton Turner A.B. 1940, Whitman College	Ore.
Lawrence Eugene Hess, Jr. B.S. 1946, U.S. Naval Academy	Pa.	Andrew Jackson Valentine (With distinction)	Fla.
Alex Arthur Kerr (With distinction)	Wash.	B.S. 1945, U.S. Naval Academy	D.C.
Robert Clinton Knauf (With distinction)	N.D.	Gordon Myron Van Sanford A.B. 1949, The George Washington University	Fla.
B.S. 1949, U.S. Naval Academy		Edwin Borden White, Jr. A.B. 1944, Emory University	Va.
Robert Meredith Lucy B.S. 1947, U.S. Naval Academy	Mo.	Kenneth Tyree Whitescarver, Jr. A.B. 1942, Hardin-Simmons University	

MASTER OF LAWS

NOVEMBER 11, 1953

James Ralph Beaird B.S. 1949, LL.B. 1951, University of Alabama	Ala.	Ruth Evelyn King B.S. 1933, LL.B. 1936, University of South Dakota	D.C.
Thomas Jefferson Dillehay, Jr. B.B.A. 1927, A.M. 1929, Baylor University	Tex.	James Mahan Roamer, Jr. B.C.E. 1950, J.D. 1952, The George Washington University	D.C.
J.D. 1952, The George Washington University			

FEBRUARY 22, 1954

James Joseph Bierbower B.S.S. 1947, LL.B. 1949, Georgetown University	Va.	John Henry Franz B.S. 1948, University of Notre Dame LL.B. 1951, Georgetown University	Ill.
Henry Jules Camarot LL.B. 1951, The George Washington University	Alaska		

Degrees Conferred

435

William Pendleton McClure B.S. 1949, University of Pennsylvania LL.B. 1951, The George Washington University	Md.	Tozey Hannon Sewell B.S. 1943, LL.B. 1948, University of Alabama	Ala.
Edith Homay Miller B.S. 1935, University of Idaho LL.B. 1946, The George Washington University	Idaho	Robert Louis Sweeney A.B. 1948, LL.B. 1951, St. Louis University	Mo.
Wallace Don Riley Ph.B. 1947, University of Chicago B.B.A. 1949, M.B.A., LL.B. 1958, University of Michigan	Mich.	Dale Alan Wright B.S. 1948, Carnegie Institute of Technology LL.B. 1952, The George Washington University	Pa.

JUNE 9, 1954

Richard Lee Brown LL.B. 1949, University of Texas	Texas	Watt Nicholas Martin LL.B. 1950, A.B. 1952, The George Washington University	N.C.
Lawrence Edward Carr, Jr. B.S. in Com. 1948, LL.B. 1949, University of Notre Dame	Md.	Matthew Joseph McCartin LL.B. 1949, St. John's University	N.Y.
William Elliot Fuller B.S. 1944, U.S. Coast Guard Academy J.D. 1952, The George Washington University	N.J.	Douglas Meek Moore A.B. 1949, LL.B. 1951, University of Utah	Utah
William Alquin Granberry B.Lad.Eng. 1949, Georgia Institute of Technology J.D. 1953, The George Washington University	Ala.	Francis Bates Nicholson A.B. 1950, Wofford College LL.B. 1952, University of South Carolina	S.C.
John Taylor Green A.B. 1940, Louisiana State University LL.B. 1949, University of Richmond	Miss.	Arthur Gordon Patton A.B. 1946, Yale University LL.B. 1950, The George Washington University	Va.
Sheldon Hurwitz B.S. 1952, LL.B. 1953, University of Buffalo	N.Y.	Nelson Alexander Stitt A.B. 1938, University of Pittsburgh LL.B. 1952, The George Washington University	Va.
John Botaventure Kenkel A.B. 1949, Colgate University LL.B. 1952, The George Washington University	Md.	Hajime William Tanaka A.B. 1950, University of California at Los Angeles LL.B. 1953, The George Washington University	Calif.
Carl Edward Lundin B.S. 1938, Trinity College LL.B. 1942, Hartford College of Law	Conn.		

MASTER OF COMPARATIVE LAW

NOVEMBER 11, 1953

Kamal Mohamed Aboul-Kheir Licence en Droit 1943, University of Fouad I, Egypt	Egypt
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FEBRUARY 22, 1954

Hassan Mahmood Al-Hashimi Licentiate in Law 1946, Baghdad Law College	Iraq	Vera Herta Lang Osman Dr. Jur. 1942, University of Vienna	D.C.
Ivan Paul Glaser-Skalay Dr. Jur. 1933, Comenius University	Va.	Borge Kvamme Varmer Cand. Juris. 1950, University of Copenhagen	D.C.

JUNE 9, 1954

Herwig Grote Juris Doctor 1952, University of Freiburg, Germany	Germany
--	---------

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

NOVEMBER 11, 1953

Karl Stoess
LL.B. 1950, University of Erlangen,
Germany

D.C. Cornelius Henry Zondag
LL.B. 1938, J.D. 1940, Leyden
University, The Netherlands
A.M. 1940, New York University

D.C.

FEBRUARY 22, 1954

Erich Hans Markel
S.J.D. 1941, Frederico-Alexandrine
University of Erlangen

Va.

JUNE 9, 1954

Fran Giupanovich
LL.D. 1922, University of Zagreb,
Yugoslavia
Riccardo Gori-Montanelli
LL.D. 1946, University of Florence,
Italy
S.J.D. 1950, University of Virginia
Kiril Juszenko
LL.B. 1945, University of Belgrade,
Yugoslavia
Gabriel Charles Oltramare
Licence en Droit 1940, University of
Geneva, Switzerland

D.C. Branko Martin Pelelj
LL.B. 1931, LL.D. 1939, University of
Zagreb, Yugoslavia
Ph.D. 1950, Georgetown University

D.C.

D.C. Ludovit George Ruhmann
LL.D. 1925, Comenius University,
Czechoslovakia

D.C.

D.C. Peter Siekanowicz
LL.D. 1924, University of Lwow,
Poland

D.C.

D.C.

DOCTOR OF JURIDICAL SCIENCE

JUNE 9, 1954

Frank Fedele
B.B.A. 1919, College of the City of
New York
LL.B. 1942, Fordham University
LL.M. 1951, New York University
Dissertation: "The Evolution of the
Court Martial System and the Role
of the United States Court of Mil-
itary Appeals in Military Law"
Wilbur Lindsey Fugate
A.B. 1934, Davidson College
LL.B. 1937, University of Virginia
LL.M. 1951, The George Washington
University
Dissertation: "Foreign Commerce and
the Federal Anti-Trust Laws of the
United States"

N.Y.

Emory Clark Smith
A.B. 1929, North Texas State College
A.M. 1933, University of Texas
LL.B. 1937, Southern Methodist
University
Dissertation: "The Law of Maritime
Exploitation"

Texas

Fla.

John Walton Wyatt
B.S. 1918, Alabama State Teachers
College

Va.

LL.B. 1947, University of Florida
LL.M. 1952, The George Washington
University
Dissertation: "Regulation and Con-
trol Under the Commerce and War
Powers and Just Compensation
Under the Fifth Amendment"

THE SCHOOL OF ENGINEERING

BACHELOR OF CIVIL ENGINEERING

FEBRUARY 22, 1954

James Robert Grigsby

Va.

JUNE 9, 1954

Calvin Roscoe Burke	Md.	Charles Oakley Higginson	Va.
Arturo Ynosencio Casanova III	Md.	Frank Joseph Lipovsky	Pa.
Warren Lynwood Chestnutt	D.C.	Pedro Marquez-Barry	Venezuela
James M. Aurel Colangelo, Jr.	N.J.	Harry Emanuel Schwarz	Md.
Warner Allen Cornwell	Md.		
Warner Alonzo Gorman	Nebi.		
(With distinction)			
A B 1944, University of Nebraska			

BACHELOR OF ELECTRICAL ENGINEERING

FEBRUARY 22, 1954

Edward Victor Hobbs	Md.	Turner Sheppard McLaurin	Va.
Stanley Thomas Lonberger	D.C.	B.S. 1945, Mississippi College	

JUNE 9, 1954

James Henry Beardsley	Md.	Frank Stadden Marshall, Jr.	Va.
Dennis Paul Beardsley, Jr.	D.C.	Roy Lee McFolin	Tenn.
John Eugene Bason Doolce	Va.	Robert Hayes Montgomery	D.C.
Paul Marshall Douglass, Jr.	Va.	Ben Joseph Murdock	Md.
Robert Henry Foise	Fla.	James Curtis Neely	Md.
Paul Allen Foster	D.C.	Kenneth Lothrop Park	Md.
Robert Edward Gardner	D.C.	Robert Hilton Pickard	Va.
Lincoln Larkin Griffin	Va.	Edward Prada	Va.
Norman Jerome Hallquist	Colo.	Richard Sabella, Jr.	D.C.
James Clayton Hatten, Jr.	Va.	Paul Emil Schmid, Jr.	Md.
Louis Allen Hienzenz	Va.	Salvatore Servidio	Va.
Bernard Lee Johnson	D.C.	Robert Ellsworth Simpson	D.C.
(With distinction)	Va.	Frank Herbert Utley	D.C.
Robert Allen Klause	Md.	Elmer William Whitlock, Jr.	D.C.
Francis Joseph MacDonald	Va.	Walter Phillip Witkowski	D.C.
Joseph Wolf Marsh, Jr.	D.C.	Hsin Ping Wong	Hong Kong
(With distinction)		William Avery Yates, Jr.	Va.

BACHELOR OF MECHANICAL ENGINEERING

FEBRUARY 22, 1954

Jack Arthur Frost	D.C.	Hunter Luxader Terrett	Va.
Ernest Mardock Quinn	Md.		

JUNE 9, 1954

David Barry Boyce	Va.	Philip Joseph Martin	N Y
Maxwell Catwells	D.C.	Joseph Barwick Pendergast	W Va
Robert Joseph Fynon	Va.	Nelson Leeds Van Kleeck	D.C.
Arthur Onno Luning	Va.	George William Wagner	N.J.

BACHELOR OF SCIENCE IN ENGINEERING

NOVEMBER 11, 1953

Daniel Andrew Belmont	Va.	Joel Carroll	D C
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FEBRUARY 22, 1954

Herbert George Chandler	Md.	Robert Warren Mitchell	Va.
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JUNE 9, 1954

Joseph William Grady
Gilbert C. Josephson
Herbert Harry Rosen

Md. Ralph Aloysius Tobin
Md. George Wnek
Pa.

Va.
W.Va.

THE SCHOOL OF PHARMACY

BACHELOR OF SCIENCE IN PHARMACY

FEBRUARY 22, 1954

Rita Adele Orzel

Pa.

JUNE 9, 1954

Raisa Cerny
Gerald Morris Chatlin
Eli Isaac Chyatte
(Special honors in Pharmacy)
A.B. 1951, University of Maryland
Harrison Lee Cooper
Thomas Edwards Cox
Sister Mary Joseph Edelen
James Albert Fink, Jr.
Herbert Samuel Gross
John Michael Heller
John Joseph Dosida Iglehart
Margaret Elizabeth Johnson
Myles Charles Kaye
Theodore Kranzler
Milton Samuel Lemons
Lawrence Eli Lerner
Leon Levy

D.C. Gordon Quincy Newton
D.C. David Paulson
D.C. Harold Lloyd Phelps
(Special honors in Pharmacy)
George Wilson Pickens
(Special honors in Pharmacy)
Md. Joseph Vincent Pistone
Va. (Special honors in Pharmacy)
Pa. Benjamin William Posin
Va. Carl Anthony Quaglia
Md. Carmine William Racca
Md. John Frederick Sencindiver
D.C. A.B. 1948, Bridgewater College
Md. Howard Ashby Small
Md. Sister Mary Theodore Speech
N.J. Harold Samuel Sugar
Md. A.B. 1940, The George Washington
D.C. University

D.C.
D.C.
W.Va.
D.C.
D.C.
D.C.
N.J.
R.I.
Vt.
W.Va.
Pa.
D.C.

THE SCHOOL OF EDUCATION

BACHELOR OF ARTS IN EDUCATION

NOVEMBER 11, 1953

Kate Turner Eadie
Naomi Regelson Freeman
Thelma Passonne Hill
Virena Elizabeth Daniell Hill
Theresa Ann Jones

Va. Ethel Hilowitz Kopkin
Conn. Marian Lehman Meiner
Ind. Catherine Ermidis Sakicis
Va. Sarah Hale Sutton
N.C. Celia Rae Zinser

Tenn.
Fla.
N.Y.
Md.
Iowa

FEBRUARY 22, 1954

Anne Meredith Harris Rullman
Mildred Cora Simmons

Va. Helen Markovitz Spool
D.C.

D.C.

JUNE 9, 1954

Rene Allmont
Barbara Louise Benner
William Allen Brooks, Jr.
(West. Association)
Olaf Grane DeLeon
Howard Lee Farburgh, Jr.
Jamie Swafford Kulavski

N.Y. Jacqueline Lee May
Va. Evelyn Marie Nigh
Md. Barbara Lee Orden
Md. Fannie Fairchild Pope
D.C. Gertrude Hardy Sutherland
Md. Joyce Ann Westrafer
Md. Jay Wheldon Williams

Va.
W.Va.
D.C.
Md.
Md.
Pa.

BACHELOR OF SCIENCE IN HOME ECONOMICS

FEBRUARY 22, 1954

Flor Alma Wright

D.C.

JUNE 9, 1954

Elizabeth Joyce Allen
America Breang
Mary Ball Elwyn
Beatrice EvansD.C.
N.D.
Md.
Mass.Beatrice Mae Hamlin Holm
Joanne Fay Showalter
Elizabeth Ann Yager
Helen Huntington DeFree YagerhoferVa.
Va.
Va.
D.C.

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

NOVEMBER 11, 1953

James William England
Benjamin Thompson HarrisVa.
Va.Myrta Ellen Wiley
Jan Wojtowicz, Jr.Fla.
N.J.

FEBRUARY 22, 1954

Edgar Joseph Beale
Thomas Constantinus Bosmans
Paul Anthony Cavigas
Robert Bernard GoldsteinKy.
D.C.
D.C.
N.Y.Joseph Spencer Harvey
Kenneth Jay Kern
William Alfred Neal
Cecil Rapp PerkinsD.C.
N.Y.
D.C.
W.Va.

JUNE 9, 1954

Jack Edward Baumgartner
Mary Joyce Barks
Paul James Creamer
William Raymond Fox
Milva Jelazaveta Hasalová
William Francis HauptmanVa.
Va.
D.C.
D.C.
D.C.
Md.Stephen Joseph Kischeck
Patricia Anne Moore
Joan Carolyn Schatzman
Paul Byron Stroup
Mary Lucile ThompsonPa.
D.C.
D.C.
Md.
Va.

MASTER OF ARTS IN EDUCATION

NOVEMBER 11, 1953

Evelyn Robinson Anderson
B.S. 1942, Radford College
Nancy Hamilton Bailey
B.S. in Ed. 1946, West Virginia
University
Prof. Richard Ballengee, Jr.
B.S. 1944, West Virginia Institute of
Technology
Clair Berger
B.S. 1950, Wilson Teachers College
Joseph John Bernot
B.S. in P.E. 1950, The George
Washington University
Howard Ralph Boyce
B.S. 1943, U.S. Merchant Marine
Academy
B.S. in P.E. 1950, The George
Washington University
Margaret Gould Brown
B.S. 1933, Longwood College
Ruth Kemp Brown
A.B. 1927, Southwestern University
Jessie Catherine Carpenter
B.S. 1943, University of Virginia

Va.

D.C.

Va.

D.C.

D.C.

D.C.

Va.

Va.

Va.

Va.

Va.

Va.

Mildred Elizabeth Steed Cochran
B.S. 1941, Longwood College
Eleanor Gayle Currin
B.S. 1948, Farmville State Teachers
College
Robert Martin Dawson
B.Mus. 1950, Catholic University of
America
Helen Jane Diaz
B.S. 1944, Wilson Teachers College
Kathleen I. Hart Eiders
A.B. in Ed. 1948, The George
Washington University
Robert Whittington Eller
B.S. 1941, Wilson Teachers College
Eileen Frances Farrell
A.B. 1941, College of St. Francis
Blaine Perser Friedlander
A.B. 1946, University of Virginia
Charles Cornelius Gibson
A.B. 1950, University of Nevada
Ralph Herbert Gress
A.B. 1946, Catawba College

Va.

Va.

D.C.

D.C.

D.C.

Va.

N.C.

Ill.

Va.

Nev.

Fla.

Gerald Richard Groves A.B. 1951, The George Washington University	Va.	Edward Charles Pino A.B. 1950, Michigan State College	Mich.
Amelia Kolk Haile B.S. 1939, Johns Hopkins University	Md.	Gladys Lorraine Reed B.S. 1944, Wilson Teachers College	D.C.
Charles Arvel Hart B.S. 1943, Wake Forest College	Va.	Kenneth Martz Scollon A.B. 1950, The George Washington University	D.C.
Marjorie Lillian Heinzerling B.S. 1929, Southeastern State Teachers College	D.C.	Harvey Andrew Shipman A.B. in Ed. 1950, The George Washington University	Mass.
Lorraine Marie Helton A.B. 1935, Marshall College	W.Va.	Lynn Leroy Swearingen A.B. 1931, Sioux Falls College	D.C.
Edwin William Keck B.S. in Ed. 1948, Temple University	Pa.	A.M. 1933, State University of Iowa	Va.
Cecilia Mildred Kenneally B.S. in Ed. 1940, Boston University	Mass.	Ada Elizabeth Taylor A.B. in Ed. 1940, The George Washington University	Hawaii
Margaret Ann Kiley A.B. in Ed. 1951, University of Buffalo	D.C.	Violet Sumie Todoki A.B. 1951, Syracuse University	Va.
Dorothy Lord Limer B.S. 1953, Wilson Teachers College	Va.	Paul Weber B.S. in P.E. 1947, The George Washington University	Ill.
James Ernest Manuel A.B. 1948, Shepherd College	Md.	Earl Williams, Jr. B.S. in P.E. 1931, The George Washington University	Va.
Elaine Bresler Marine A.B. 1951, University of Maryland	D.C.	Rayburn Albert Williams B.S. 1949, Lynchburg College	D.C.
Rupert Francis Mouré A.B. in Ed. 1951, The George Washington University	Va.	Isabelle Henkel Young B.S. 1939, Wilson Teachers College	

FEBRUARY 22, 1954

Harlan Richard Adams A.B. 1940, Shepherd College	W.Va.	Beatrice Browne Franklin B.S. 1943, Mary Washington College	Va.
Lillian Estelle Beach B.S. 1941, Long Wood College	Va.	Marie Virginia Garber B.S. 1945, Madison College	Va.
William Daniel Caffrey B.S. 1950, Indiana State Teachers College	N.C.	Harry Holt Grier, Jr. B.S. 1914, U.S. Naval Academy	Va.
Ethel Robinson Carter B.S. 1940, Madison College	Va.	Marie Louise Hobbs B.S. 1944, Radford College	D.C.
Joseph Robert Crain B.S. 1949, Milligan College	Va.	Margaret Elizabeth Miller A.B. 1948, Bryn Mawr College	

JUNE 9, 1954

Harold Newman Alexander A.B. 1946, University of Washington	Wash.	Harold Francis Mericle LL.B. 1923, A.B. 1952, The George Washington University	Va.
Helen Woodburn Annis B.S. 1930, Muskingum College	Md.	William Russell Murphy A.B. 1948, College of William and Mary	Va.
Charles Herbert Dick A.B. 1950, University of Maryland	Md.	Mary Frances Carter Roscoe B.S. in Ed. 1943, Longwood College	D.C.
Norman Hamblin Gray A.B. in Ed. 1953, The George Washington University	Va.	Wilbur Newton Scott A.B. 1943, West Liberty State College	Md.
William Leo Haugh B.S. 1948, Pennsylvania State Teachers College, Shippensburg	Md.	Corrin Peter Strong A.B. 1948, Yale University	D.C.
Thomas Joseph Jules Hawkins A.B. 1937, University of Portland	Oreg.	Joseph P. Youngs, Jr. A.B. 1947, University of Miami	
Melvin Bowman Lundes A.B. 1930, McPherson College	Va.	A.M. 1948, Gallaudet College	

DOCTOR OF EDUCATION

NOVEMBER 11, 1953

- | | | | |
|---|------|---|-----|
| Willard William Blaesser
B.S. 1914, A.M. 1940, University of Wisconsin
Dissertation: "The Contributions of the American Council on Education to Student Personnel Work in Higher Education" | D.C. | Orson William Trueworthy
A.B. 1936, Wilson Teachers College
A.M. in Ed. 1940, The George Washington University
Dissertation: "Space, Furniture, and Equipment Needs of Secondary School Core Programs" | Va. |
|---|------|---|-----|

FEBRUARY 22, 1954

- | | | | |
|---|-----|--|-------|
| Paul David Cooper
A.B. 1940, Western Maryland College
Ed.M. 1944, University of Maryland
Dissertation: "Adjusting Retirement to the Needs of Teachers" | Md. | Willa Norris
B.S. 1934, University of Nebraska
A.M. 1941, Columbia University
Dissertation: "The History and Development of the National Vocational Guidance Association" | Mich. |
|---|-----|--|-------|

JUNE 9, 1954

- | | | | |
|---|------|--|-----|
| Anne Marie de Gregorio Barkley
A.B. 1942, New York University
A.M. 1943, Columbia University
Dissertation: "The Role of the Principal in the Guidance Program of the Secondary School" | D.C. | Frederick Anderson Indorf
B.S. in Ed. 1938, University of Missouri
A.M. in Ed. 1940, The George Washington University
Dissertation: "Some Aspects of Foundation Assistance for Special Education" | Mo. |
| Jane Louise Hughes
B.S. 1941, University of Pittsburgh
A.M. 1948, University of Maryland
Dissertation: "Backgrounds of the Guidance and Counseling Movement in the United States" | Pa. | Cyrus Harold McCully
A.B. 1934, A.M. 1935, Colorado State College of Education
Dissertation: "The Validity of the Kuder Preference Record" | Va. |
| Rosaline Mary de Gregorio Edwards
B.S. in Ed. 1934, A.M. 1945, Ph.D. 1952, Fordham University
Dissertation: "The Decentralized Control of Punctual Attendance in the Secondary School" | Md. | | |

THE SCHOOL OF GOVERNMENT

BACHELOR OF ARTS IN GOVERNMENT

NOVEMBER 11, 1953

- | | | | |
|---|--|--|--|
| Carroll Evans Aldhizer
Henry Brooks
Erika B. B. Jr.
Leland A. B. Jr.
Gordon Capello
James A. Cerk
Ruth C. Cerk
Anna C. Cerk
(W. C. Cerk)
Jack Marshall Dietrich
Joseph Patrick Flannery | Va.
Va.
Va.
Fla.
D.C.
D.C.
D.C.
D.C.
Kans.
D.C. | Salney Ralph Gross
David Boston Hahn
William Linus Kutz
Walter Marks
James Anne McCartney
Hugh Michael Miller, Jr.
Kath Allen Murr
William Parkhurst Smith, Jr.
William Russell Taylor
Nathan Thurner
Edgar Duane York | Ill.
D.C.
Va.
N.Y.
D.C.
D.C.
Kans.
D.C.
Md.
N.Y.
Md. |
|---|--|--|--|

FEBRUARY 22, 1954

George Samuel Ahlfield	Va.	Wilhelmina Tortike Loomis	D.C.
Daniel Albert	D.C.	(With distinction)	Md.
Gail Treat Bartlett	D.C.	Calbot Willester Meyer	D.C.
Charles Richard Campbell	D.C.	Clarence Abner Morgret	D.C.
Lowell Dean Clark	Minn.	Marjorie Ward Monds	D.C.
Richard Baruch Duckett	Md.	Helen Mae Perschnick	Md.
Charles Edward Erdman	D.C.	David Justin Robertson	Ga.
William George Evans	Pa.	John Clinton Sauls	N.Y.
Stanley Glantz	Md.	Charles Sidney Schlissel	Va.
Phillip Lee Green	Va.	Karl Waldo Shipman	Md.
James Aldrich Hall, Jr.	Va.	Charles Richard Sitter	D.C.
Earle Haney, Jr.	D.C.	(Special honors in Foreign Affairs)	Pa.
Milton Arthur Horowitz	Md.	Alice Boshon Stein	Md.
Donald Bernard Iverson	S.D.	Rodman William Wallis	Md.
Jay E. Kaplan	N.Y.	Donald Mark Wilansky	
Charles William Kelley	D.C.		

JUNE 9, 1954

Haakon Roy Andersen	Md.	Sam Holdsambeck	Ala.
Kenneth Arthur Anderson	Md.	Murray Louis Howder	D.C.
Craig Starbuck Atkins, Jr.	Md.	Edward Paul Jennings, Jr.	Md.
James Dewey Awtry, Jr.	Fla.	James Walter Johnson	Canal Zone
Edward Thomas Beese	Oreg.	William Adams Lang	Pa.
Beverlee Ann Bicknell	Idaho	Raymond Albert Lucas	D.C.
Donald Mayo Bisbee	Va.	(With distinction)	D.C.
Mitchell Blankenstein	D.C.	Harold Frederick Lusk	N.Y.
(With distinction)		Dimitri Peter Mallios	Greece
Carl Theodore Bodilus	Pa.	Matthew David Margolis	D.C.
(With distinction)		Constantine Leonidas Mastrantonis	D.C.
Lawrence Mark Boward	Md.	Photios Adam Mavridis	Md.
Ronald Dean Brandon	D.C.	Kenneth James McGuire	Va.
Ben Locke Brown	Ky.	LeRoy Newkirk	Va.
Thomas Marion Brown	Va.	Edward Eugene Oliver	Md.
Everett Daniel Canafax	Ky.	George Leavitt Olmstead	Md.
Melvin Eugene Carnahan	Mo.	James Walker Parker, Jr.	Ga.
Roland Peter Ceolla	Md.	Stephen Polaschik	N.Y.
Leonard Dayton Coe II	N.Y.	Wayne Casimir Reither	D.C.
James Clyde Coffin	Minn.	Donald Francis Ring	Ga.
Barry Lloyd Daniel	N.Y.	Edward Francis Ryan	Va.
Josephine Russell Deal	Kana.	Paulette Marie Salto	D.C.
Frances Brook Dear	N.C.	Joe Taitano San Agustin	D.C.
H. Philip Despres	D.C.	Sidney Saunders	Va.
Louis Howard Diamond	D.C.	Alfred Scaffidi	D.C.
William Francis Dickson	Va.	Nicholas Tyler Scheel	Va.
Marie-Berthe Dion	Canada	Bruce Zoflin Smol	U.S.
(Special honors in Foreign Affairs)		Marvin Franklin Smith	D.C.
Norman Martin Drake	Md.	Robert Carl Snow	D.C.
Carol Patricia Dunn	Va.	William Solitt	D.C.
Thomas Michael Ennis	Va.	James McNeill Stancill, Jr.	D.C.
Albert Thomas Fennell	Va.	Edward Morris Statland	D.C.
George Edward Fleury	Va.	Arthur Steier	Va.
Robert Barth Goble	Pa.	Henry Akona Tanaka	Va.
Francis Xavier Gaepler, Jr.	Md.	Robert Andrew Wassink	Va.
John Marietta Gallagher	Va.	John Molyneux Welsh	Va.
Edwin Francis Gambliss	D.C.	Morris Parker Wheeler	Ill.
Gloria Grace Gammeter	Ill.	Robert Milton White	Va.
Thomas Burton Grady	Md.	Suzanne White	N.Y.
Bettie Nan Grimsby Hall	Va.	(With distinction)	
Irene Frances Harper	D.C.	William Cresshton Willard	
Allen Hugh Harrison, Jr.	Va.	Paul Wohl	

MASTER OF ARTS IN GOVERNMENT

NOVEMBER 11, 1953

Erwin John Lachman	D.C.	Krishen Daval Mathur	India
B.S. 1947, University of Pennsylvania		B.S. 1944, Chhatra University, India	

FEBRUARY 22, 1954

Darrell Denmeade Carter
A.B. in Govt. 1949, The George
Washington University

Ill. James Edgar Harris
A.B. 1940, Hardin-Simmons University Texas

JUNE 9, 1954

Robert Reynold Gardner
Ed.B. 1933, Southern Illinois University
Bernard Greenberg
A.B. 1948, University of Massachusetts
Judah Greenzaid
A.B. 1950, The George Washington
University

Ill. George Macesich
A.B. in Govt. 1953, The George
Washington University Ohio

D.C. Bushra Qureshi
A.B. 1949, A.M. 1951, Islamic College,
Pakistan D.C.

N.Y. Alexander Seymour Roesell
A.B. 1950, Georgetown University D.C.

Minn. Joyce Sherwood
B.S. 1945, Central Michigan College
of Education Mich.

Mass. Ernest Myrl Squyres
A.B. in Govt. 1949, The George
Washington University Texas

Wis. Ed B. 1937, Wisconsin State College,
River Falls

MASTER OF ARTS IN PUBLIC ADMINISTRATION

NOVEMBER 11, 1953

Beverly Mac Barrett
A.B. 1949, The George Washington
University

La. Martha Jane Harris
B.S. 1942, University of Pittsburgh D.C.

FEBRUARY 22, 1954

Howard Kehn
A.B. 1940, University of North Carolina N.C.

JUNE 9, 1954

Alfred P. Boileau
B.S. 1941, Pennsylvania State
University

Pa. James R. Gotch
LL.B. 1917, Washington University Md.

John H. Cain
B.S.E. 1931, C.E. 1932, University
of Mississippi Va.

Miss. Richard Alvin Hollenberg
A.B. 1951, The George Washington
University

Howard Donald Critwell
A.B. 1941, The George Washington
University

D.C. Robert Duvall Pfahler
B.M.E. 1948, The George Washington
University Ky.

John Aloysius Delaney
A.B. 1950, The George Washington
University

Va.

MASTER OF ARTS IN PERSONNEL ADMINISTRATION

FEBRUARY 22, 1954

Freach Mayes Clevinger, Jr.
A.B. 1934, Emory and Henry College

Va. James Joseph Kennedy
A.B. in Govt. 1951, The George
Washington University D.C.

JUNE 9, 1954

Artie Page Baker, Jr.
B.S. 1951, University of Maryland

Md. Anna Marie PuschkarSKI
Ph.D. 1944, University of Vienna

Austria

MASTER OF BUSINESS ADMINISTRATION

NOVEMBER 11, 1953

Travis Monroe Hetherington
B.S. 1933, U.S. Military Academy

Texas

FEBRUARY 22, 1954

Joel Richard Barwick
A.B. in Govt. 1950, The George Washington University
Marvin Butler Clifford
A.B. in Govt. 1950, The George Washington University
William John Davitt
B.S. in B.A. 1947, University of Colorado

Md. Peter John Poletti
B.S. in Aero. Eng. 1950, Massachusetts Institute of Technology
Tenn. Gilbert Schwartz
B.S. 1940, Ohio State University
Md. George Henry Werner
B.M.E. 1940, The George Washington University

N.Y.

N.Y.

Md.

JUNE 9, 1954

Frank Melvin Arthur
A.B. in Govt. 1953, The George Washington University
Harlan Lon Cheney
A.B. 1941, Yankton College
Martha Kathryn Fling
A.B. in Govt. 1940, The George Washington University
Hugh Joseph Gownley
B.S. 1941, University of Scranton
John Nelson Hughes
B.S. 1931, U.S. Naval Academy
William Cornelius Kuhn
B.S. 1936, University of Pittsburgh
Lincoln Louis Letterman
A.B. 1936, University of Washington
Arthur S. Linder
B.S. 1941, Purdue University
Winston William Marsh
A.B. 1941, Waterberg College
Clark Ogden Martin
B.S. 1938, University of Virginia
John Charles Mateika
B.S. 1952, St. Louis University

Va. Frank Day McMullen, Jr.
B.S. 1946, U.S. Naval Academy
Iowa George W. Netta
B.S. 1949, U.S. Naval Academy
Va. Michael Gallagher O'Connor
B.S. 1931, U.S. Naval Academy
Md. Richard Jones Reid, Jr.
B.S. 1941, U.S. Naval Academy
Md. Earl Joseph Schmitt
B.S. 1942, Loyola College, Baltimore
Iowa Philip Kingsland Sherman
B.S. 1933, U.S. Naval Academy
Pa. William Wharton Stetson
B.S. 1941, U.S. Naval Academy
Wash. John James Unterkofler
B.S. 1951, St. Joseph's College
Conn. John J. Walsh
B.S. 1947, College of the Holy Cross
Md. Albert R. Weldon
B.S. 1946, U.S. Naval Academy
Va. M.S. 1944, Massachusetts Institute of Technology
Md. Henry Randolph Wilson
B.S. 1945, U.S. Naval Academy

Md.

Texas

La.

N.C.

Md.

Va.

Maine

Pa.

Mass.

N.Y.

Calif.

THE COLLEGE OF GENERAL STUDIES

ASSOCIATE IN ARTS

NOVEMBER 11, 1953

Donald Melvin Honeywell

Nebr.

FEBRUARY 22, 1954

Charles Nicholas Klein

Va. Charles Harvey Mitchell Vohs

Md.

JUNE 9, 1954

Car. Finch Dinwiddie
 School High. Gizardi
 Maine Julia Muir

Mass. Kip Ross
 D.C. Ray Hadley Young
 D.C.

D.C.
 Calif.

BACHELOR OF ARTS

NOVEMBER 11, 1953

Virgil Ney

Md.

JUNE 9, 1954

Walter Rawson Godard

Maine Marjorie Gibson Guggenheim

D.C.

THE GRADUATE COUNCIL

DOCTOR OF PHILOSOPHY

NOVEMBER 11, 1953

Fredrick Louis Bergmann
 A.B. 1947, Washburn Municipal
 University of Topeka
 A.M. 1949, State College of Washington
 Dissertation: "A Study of Gaseous
 Alterations of Non-Shakespearean
 Plays"
 Lloyd William Buhman
 A.B. 1939, A.M. 1941, Washington
 University
 Dissertation: "A Presentation and
 Analysis of the works of Benjamin
 Voltaire, a French-Swiss author
 from the Canton de Vaud"

Ind. William Aaron Krissay
 B.S. 1948, Georgetown University
 M.S. 1949, The George Washington
 University

D.C.

Dissertation: "A Pharmacologic Study
 of Cholinergic and Adrenergic In-
 fluences on the Respiratory Center
 of the Cat"

Va.

Stylanos Demetrios Protonotarios

Greece

B.S. 1951, Wagner College
 A.M. 1951, The George Washington
 University

Dissertation: "Physiological Effects
 of the Bacterial Polysaccharide
 (P-45) on the Blood Pressure of
 Splenectomized and Sham-Splene-
 ctomized Rabbits"

FEBRUARY 22, 1954

Jack Ellinson
 B.S. 1947, College of the City of
 New York
 A.M. 1949, The George Washington
 University
 Dissertation: "Attitudinal Intensity
 in Relation to Personality and
 Status"
 Valerianus Paraga
 Muz Math 1938, University of
 Latvia
 Dissertation: "Affine Connection in
 Space of Line Elements"

III. Helen Seegar Stone

Ind.

A.B. 1946, Northwestern University
 A.M. 1949, The George Washington
 University

Dissertation: "Relationship of Items
 of the Cumulative Record to Post-
 High School Status"

N.Y.

JUNE 9, 1954

Conn. Henry Birnbaum
 A.B. 1945, A.M. 1946, New York
 University

Md.

Dissertation: "American Literary Na-
 tionalism After the War of 1812
 1815-1825"

Norman Altzuler
 B.S. 1950, M.S. 1951, The George
 Washington University
 Dissertation: "Ascorbic Acid Distribu-
 tion Following the Administra-
 tion of Adrenocorticotrophin
 (ACTH), Cortisone, or Epine-
 phrine"

- | | | | |
|-------------------------------------|-------|--|--------|
| Patricia Elly | Md. | William Vincent Crahan Leahy | Md. |
| A.B. 1949, College of Notre Dame | | A.B. 1944, University of Pennsylvania | |
| of Maryland | | A.M. 1953, The George Washington | |
| A.M. 1951, The George Washington | | University | |
| Dissertation: "Studies of Phenolic | | Dissertation: "The Physiological Fate | |
| Compounds as Chemotherapeutic | | of Radio-Phosphorus Labeled Trans- | |
| Agents Against Polymyelitis | | fused Leucocytes" | Md. |
| Virus | | John William Skinner | |
| Katherine Virginia Greene | Va. | A.B. 1942, Wesleyan University | |
| A.B. 1947, Eastern Nazarene College | | A.M. in Govt. 1947, The George | |
| A.M. 1948, The George Washington | | Washington University | |
| University | | Dissertation: "Some Aspects of the | |
| Dissertation: "Studies on Neuro- | | Costs of the Federal Electric Power | |
| Muscular Fatigue" | | Program, 1940-1952" | Md. |
| Edward Haeskaylo | W.Va. | Hans Hermann Strupp | |
| A.B. 1949, A.M. 1950, The George | | A.B. 1945, A.M. 1947, The George | |
| Washington University | | Washington University | |
| Dissertation: "Studies of the Phys- | | Dissertation: "An Empirical Study | |
| iology of Pine Mycorrhizae" | | of Certain Psychotherapeutic Op- | |
| William Bert Hanson | Colo. | erations: An Exploration of the | |
| B.Ch.E. 1944, M.S. 1949, University | | Verbal Response Techniques of | |
| of Minnesota | | Psychiatrists, Psychologists, and | |
| Dissertation: "The Attenuation of | | Psychiatric Social Workers" | Calif. |
| Second Sound in Liquid Helium | | James Leslie Way | |
| II" | | A.B. 1948, University of California | |
| James Cecil King | Pa. | Dissertation: "The Effects of Sar- | |
| A.B. 1949, A.M. 1950, The George | | coma-37 and X-Irradiation on the | |
| Washington University | | Incorporation of Adenine-8-C ¹⁴ | |
| Dissertation: "Two Dualisms in the | | into Nucleic Acids" | |
| Syntax of Nother Teutonicus" | | | |

RECIPIENTS OF AWARDS

RECIPIENTS OF SCHOLARSHIPS

1953-54

- The Alpha Zeta Omega Scholarship:* Alan Burton Berger
The Alumni Scholarship: Leon Irving Swaberg
The American Foundation for Pharmaceutical Education Scholarships: James Albert Fink, Jr., Gust George Koustenis, Joseph Vincent Pistone
The American Society of Women Accountants, District of Columbia Chapter, Scholarship: Jeannine Delores Miller
The Byron Andrew Scholarship: Edith Erica Laufer
The Anna Bartsch Scholarship: Virginia Anne Duggins
The Emma K. Carr Scholarships: Arnold Benjamin Barr, Mitchell Blankstein, Roderick Hans Boes, Christopher Kingsley Brown, Louis Loughton Clipp, Donald Raymond Hoffeld, Harvey Douglas Kaplan, Gust George Koustenis, Gerald Ross Lynch, Henry Augustus Renz III, Alex Rode, Larry Bernard Silver, Richard Joseph Sincoll, Fred Brownell Tomlinson
The Henry Harding Carter Scholarship: James Alan Cauffman
The Maria M. Carter Scholarship: Orville James Emory, Jr.
The Daughters of the American Revolution Scholarship: Nancy Lee Price
The Isaac Davis Scholarship: Lucille Alberta Anstine
The Charles Worthington Darcey Scholarship: James Forbes Merow
The School of Engineering Scholarships: Orron Eugene Kev, John Janis Ter-auds, Edward Lee Tucker, Allen Robert Wolfe
The Robert Farnham Scholarship: Deena Ruth Scharr
The Elma Lewis Harvey Scholarship: Barbara Ann McLeod
The Lillie S. Hazleton Scholarship: Joan Marshall Condee
The High School Scholarships: Beverly Jane Alexander, Gretchen Louise Arnold, Walter Lawrence Baumann, Carolyn Schuman Berk, Kenneth Allan Brow, Ruth Nelson Cavanagh, Edmund Chin, Donald Scaife Detwiler, Ronald Olson Dixon, Eileen Jo Edgren, Thomas Albert Farley, John George Fletcher, Karin Maria Floyd, Edward Lamar Gatewood, Julius Morton Goodman, Neil Wylie Good-sell, Joyce Marie Gray, Gary Edward Greene, Barbara Ann Guarco, Rosalind Hauk, Jo Ann Henry, Monty Arnold Herman, William Randolph Hix, Richard Scott Hudgins, Richard Miles Kaufman, Samuel Jay Kersey, Steven Everett Levy, Harold Estiah Mesirov, Gitta Mills, Judith Rochm Moffett, John David Oberholtzer, Carol Landis Piaton, Jurgen Francis Piper, Ellen Teresa Raley, Loretta Mac Reeves, Ann Madison Reid, Leonore Tema Shank, Ernest Rodney Shifflett, Mary Sandra Shoemaker, Ellen Barbara Sincoll, Roger Earl Spitzer, Jere Bart Stern, Barbara Lynn Stuart, Beverly Ellen Teeter, Bernhard Ranier Tittmann, Harold Lee Toothman, Frederick Bur-det, Warder, Jr., Nell Weaver, Goldie Aurelia Weiss, Rosa Dahl Wiener, Ann Morgan Williams, Golda Joyce Winowald
The High School Discussion Conference Scholarship: Eugene Isaak Lambert
The Kappa Alpha Theta Scholarship: Barbara Cohen Wolf
The Kappa Psi Scholarship: Joel Shulman
The Law School Scholarships: Russell Edwin Carlisle, Robert Patrick Casey, James Wesley Crowther, John Francis Dominguez, William John Driscoll, Richard Joseph Fay, Homer Mark Jensen, Ronald Earl Madsen (summer and spring terms), Edwin John Monsma, Henry McDonald Moore, William

- Brice Smith, Gary Lloyd Theurer, John Walter Vaughn, Francis Joseph Wilson
- The Eugene and Agnes E. Myer Scholarships:* Gayla Osna April (spring term), Margaret Graham Busick, Charles Gary Eagan (spring term), Milbrey Lee Estes, Harold Leopold Floyd, George Webster Latimer, Jr., Phyllis Diane Mensh, Charlotte Sue Mickelson, Ann Tsuneko Murayama, Frances Barbara Press (spring term), James McNeil Stancill, Jr., Otto Herman Ulrich, Jr., Leo Bryant VanHerpe, Robert Howard VanSickler, Diane Corinne Wilson, Joan Kay Wisser
- The A. Morehouse Scholarship:* Henry Earl McLane, Jr.
- The National League of Masonic Clubs Scholarship:* Ronald Joseph Krasndorf (spring term)
- The Newspaper Scholarships:*
- The Evening Star:* Milton Eldridge Garrison, Bernard Arthur Goodrich, Ann Mark
- The Washington Post and Times Herald:* Mary Nell Gailbreath, Joan Ellen Lief
- The Panhellenic Association of Washington D. C., Scholarship:* Thelma Jean Reagan
- The Paul Pearson Scholarship:* Theodore Kranzler
- The John O. Rankin Scholarships:* Charles Reed Bryant, Henry Dawson Wells
- The Lulu M. Shephard Scholarships:* John Edward Duncan, Sarah Jean Parker
- The David Spencer Scholarships:* Milbrey Lee Estes
- The Student Activities Scholarships:* John William Adams, William Dale Amos, Claude Bo Austin, George Boone Baird, Arden Baker, Lawrence Keith Baker, Arlin Windell Barr, Stephen Bauk, Jack Edward Baumgartner, Edgar Joseph Beale, Ludwig Clyde Bergman, Carl Theodore Bodolus, Jo Francis Bound, Thomas Constantinus Bosmans, Millard Eugene Boteler, John Daniel Buckingham, Edward Alexander Catino, William Bertis Chesney, Leonard Francis Ciemniecki, Richard Charles Ciento, Basil Ciriello, James Scholl Clark, Voris Ray Conrad, Frank Edward Continetti, John Joseph Daly, George Dancu, Norbert Earl Danz, Philip Henri DeTurk, Walter James Devlin, Paul Francis DiBiase, Louis Pasquale DiPietro, Louis John Donofrio, John Jerome Doush, Norman Martin Drake, Earl Donald Ebersole, Joseph Lee Ely, James William England, William Raymond Fox, Robert Martin Frederick, Howard Eugene Frustick, Wallace Johnson Furr, Kenneth Aubrey Garrison, Richard Muller Gaskell, Richard Joseph Gaspari, Richard Sanborn Gibbs, Richard Porter Giesler, John Henry Hausmann, Bernard Lawrence Hetlin, James Merwyn Hill, Joseph Francis Hince, Jesse Oscar Hinshaw, Kenneth Hirschfield, Hubert Jack Hoff, James Anthony Holtzer, John Frank Holup, Joseph John Holup, Joseph Patrick Jacinto, Elliot Karver, Kenneth Jay Kern, John William Kinyo, George John Klein, Harry Patrick Kober, Stephen Joseph Korebeck, Bernard Clement Kovach, Frank William Kovacs, David LeRoy Liddick, Roger William Lloyd, James Edward Manning, Jerry Wendell Marvel, Joseph Robert Masciarelli, James Raymond Matthews, James Davis McDade, William Parke McHenry, Frank Douglas Morrison, Nathan James Naddeo, William Alfred Neal, John Joseph Nedrow, James Robert Orr, Augustine Ortiz, Jr., Jerry Joseph Paparella, James Edward Peake, Theodore Bachly Pearson, Ralph James Pepe, Cecil Rapp Perkins, John Robert Perry, Joseph Francis Petcavich, Richard Ross Phillips, John Joseph Posta, John Stanley Praeh, Jennings Randolph, Jr., Herbert Roy Rappaport, Robert David Reid, Donald Francis Ring, Wayne Joseph Rinick, Frank Louis Romano, Joseph Anthony Rosania, Gerard Joseph Roy, John Franklin Saffer, Edward Charles Sakach, Irving Salamy, Robert Richard Schmitz, George Edward Semkew, Joseph Elmer Semko, Robert Joseph Shuba, Edward Monte Shubeck, Ken-

neth Wayne Simonds, Vincent Anthony Siracuse, Paul Pearce Smith, George Andrew Solack, Alvin Lee Solomon, Lawrence William Spellman, Peter James Spera, Mark Franklin Spies, Paul Byron Stroup, Robert Lee Sturm, Robert Gerald Sutton, Robert Lawrence Sweeney, Myles Paul Phillip Thompson, Arnold Jay Tranen, Roger Wickersham Turner, John Richard Vaile, Ado Vaige, James Henry Wagner, Stanley Walowac, William Milton Weaver, Vernon Wesley Yates, John Joseph Yednock, John James Ziamandanis, Albert Roy Zippay, Donald Michael Zubie

The Charles Clinton Stevescher Scholarship: Leonard Irving Weinglass
The William Walker Scholarship: Henry Earl McLane, Jr.
The John Withington Scholarship: Anna Aylanian
The Ellen Woodhull Scholarship: Milbrey Lee Estes
The Zonta Club Scholarship: Brigitte Klara Buchmann
The Soroptimist Fellowship: Anna Ruth Meeks

PRIZES

1953-54

Alpha Chi Sigma Freshmen Awards in Chemistry: Harry Leopold Floyd, Roger Earl Spitzer, Bertram Zumoff
Alpha Chi Sigma Senior Award in Chemistry: David Elliott Goldberg
Alpha Delta Pi Award in Scholarship and Leadership: Phyllis Clare Ames
Alpha Kappa Psi Award in Commerce: Carl Theodore Bodolus
Alpha Zeta Omega Award in Pharmacy: Alan Burton Berger
American Institute of Chemists Award in Chemistry: Patricia Morse Federico
Byrne Thurtell Burns Award in Organic Chemistry: David Elliott Goldberg
Martin L. Cannon Memorial Award in Pharmacy: Joenette Marie Zurlo
Chi Omega Award in Social Sciences: Suzanne White
John Henry Cowles Awards in Government: Raymond Albert Lucas, Suzanne White
DeWitt Clinton Croissant Award for an essay on drama or the theater: Orville James Henry, Jr.
E. K. Cutter Award in English: Sue Allison Bercaw
Isaac Davis Awards in Public Speaking: James Arthur Robinson, Allen Sharp, John Scott Shaffer
Delta Zeta Award in Zoology: Elliott Perlin
Ellsworth Award in Patent Law: John William Ericson
Jesse Frederick Essay Award to that student who has given promise of sound citizenship and ability in "forthright reporting" in student publication: Barbara Lynn Stuart
Joshua Evans III Memorial Award to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows: Frederick Burdett Warder, Jr.
Wallie E. Fitch Award in Chemistry: David Elliott Goldberg
Alice Douglas Goddard Award in American Literature: James Arthur Robinson
Edward Carrington Goddard Award in French: Robert Meldrum Riggs
James Douglas Goddard Award in Pharmacy: George Wilson Pickens
Morgan Richardson Goddard Award in Commerce: Carl Theodore Bodolus
Gardner G. Hubbard Memorial Award in United States History: Gilbert Wilson McNamee
Kappa Kappa Gamma Award in Botany: Ann Morgan Williams
John Bell Lerner Award to that member of the graduating class of the Law School with the highest scholastic standing: Alex Arthur Kerr

Mortar Board Award to the woman student in the Sophomore Class having a scholastic standing of B or higher and the most outstanding record in activities: Barbara Lynn Stuart

Omicron Delta Kappa Award to that member of the Senior Class who, throughout his course, has done the most constructive work in student activities: Harold Esiah Mesirow

John Ordronaux Award to that member of the graduating class of the School of Medicine with the highest scholastic standing: Solomon Ettem Barr

Phi Eta Sigma Award to the beginning male student attaining the highest scholastic average in his first full term of work: Jackson Daland Reed

Phi Sigma Kappa Award to the winner in a freshman oratorical contest: Charles Ernest Friend

Pi Beta Phi Award to that member of the Senior Class who, throughout her course, has done the most to promote student activities: Anne Ruffin Page

Psi Chi Awards in Psychology: Betty Lou Shanks, Milton Burns Cole

Sigma Kappa Award in Chemistry: Harry Leopold Flood

James MacBride Sterrett, Jr., Award in Physics: Ruth Taylor Parker

Washington Personnel Association Award for attainment in the field of Business Administration: Stephen Polaschik

Alexander Wubourne Wedden Award for an essay on World Peace: Anne Seel Bikle

STUDENT ASSISTANTS

June 1, 1953 to June 1, 1954

Accounting: Mitchell Blankstein, Carl Edward Good, Jr., Chauncey Herzberg, Jr., Donald Edward Lucas, Edward Oiver, Anne Marguerite Piggot, Arthur Steuer, Robert Arthur Wassink, William Creighton Willard

Art: Barbara Harriet Edelschein

Biology: Andrew Bogdan, Lucile Eleanor Hayme (M.S.), Carol Hermine Schreiber, Mary Cohen Weitzman, Thomas Edwin Wilson (M.S.), Isidore Wodinsky (M.S.)

Botany: Jack Wayne Collier, Clark Gibbons Webster, Joseph Francis Worley

Business Administration: John Joseph Arthur (A.B.), James Dewey Awtry, Philip Lee Green, Donald Bernard Iverson, Richard Maury McCoy, Helen Elizabeth Sloulin, James McNeil Stancil, Jr., Susan Emily Vernon

Chemistry: John Davenport Crehore III, David Goldberg, Earl George Hendrick, Jr., George Webster Latimer, Jr., Joseph Wayland Linhart, Gerald Ross Lynch, Robert Carpenter Mason, Robert Gordon St. Clair

Civil Engineering: Percy Andros, Walter Aden Cornneil, George Guatney, Douglas Lorenzo Hatch, Jr., Patsy Collins Hazlett, Charles Oakley Higginson, James Katrivanos, Edward Shain Keen, Paul Kuzio, James Franklin Saunders, Jr., Harold Stegman, Richard Stirni, William Aubert Weidenmeyer

Economics: William Robert Belmont (A.B.), Samuel Peter Favarella, Lyn Henderson, Eve Kimble, George Macesch, Warren Clayton Robinson, Charlene Semer

Electrical Engineering: Donald Leighton Fetterman, Robert Hayes Montgomery, James Curtis Neely, Robert Hilton Pickard, Michael Brandies Rapport

English: Orville James Emory, Jr., Nell Louise McClenathan, Elizabeth Truman Wright

Geography: Marie Elizabeth Balshaw, Norman Randolph Mason, Jr., Barbara Anne Worley

History: Betty Fram Korpeck, Carol McKelligott, Gilbert Wilson McNamee, Barbara Jean Mesirow, Carol Mercer Thayer

- Journalism:** Kenneth Hugo Fliieger, Joseph Honick, James Cullen Johnson, Jr., Frances Laner, Elizabeth Mitchell (A.B.), John Robinson
- Mechanical Engineering:** Harry Marum Brandler, Christopher Kingsley Brown, Casper Frank Mohl, Henry Breckinridge Paris, Jr.
- Pharmacy:** Frederick Fletcher Cowan, Jr., Thomas Edwards Cox, Gust George Konstenis, Theodore Kranzler, James Henry Wood
- Physical Education for Men:** Paul James Creamer, William Raymond Fox, Robert Goldstein, Jerry Wendell Marvel, Gus Panagos, Cecil Rapp Perkins, Shirley Patricia Reed, Robert David Reid
- Physics:** Thomas Albert Farley, John Fletcher, Marilyn Glaser, Victor Grob, Nicholas John Karayianis, Samuel Allen Mawhood, John David Oberholtzer
- Political Science:** Arthur Sparrow Banks (A.B.), Charles Reed Bryant (A.M.), John Kizler, Edith Erica Laufer, Marjory Murphy, Jeannette Stathopoulos, Arthur Stillman, Suzanne White
- Psychology:** Phyllis Jane Blocher, Judy Marilyn Foelak, Margaret Gillies, Walter Hayes (A.B.), Suzanne Hill, Roger Kaufman, Frances Pasternak, Conradine Leigh Spiker, Ruth Stone (A.B.), Donald Alfred Vorwerek, Mary Wilkinson
- Romance Languages:** Lydia Lawrence Eccles
- Sociology:** Joan Kinsel Bacchus (A.B.)
- Speech:** Joseph Henry Abel, Sandra Lee Kitchen, Philip Endicott Valentini
- Statistics:** George Burton, Jr., Samuel Sheridan Mathews, Carlene Louise Parker, Michael Beatty Rowan, Alan Milton Singer, Raymond Edward Thomas, Nancy Garrison Tucker, Frederico Tuillermo Varela
- Zoology:** Hubert Bryant, Straty Harry Economon, David Robert Evans (B.S.), Neil Wylie Goodsell, Doris Sanford Hadley, Steven Everett Levy, Richard James Low, Luis Raul Otero, Gerald Ivan Rozansky, Jerome Lewis Sandler, Henry Shimabukuro, Helen Louise Stein.

STUDENTS REGISTERED

SUMMER TERM 1953

FALL AND SPRING TERMS 1953-54

A		
Aaronson, Charles Martin	D.C.	Adams, Carol Anne
A.B. 1952, The George Washington University		Adams, Devitt John
Abadja, Mina	D.C.	Adams, Dolly
Abbot, Frank Leroy	D.C.	Adams, Freda Ellen
A.B. 1930, Central Missouri College		Adams, Harlan Richard
Abbot, Linda Lou	D.C.	A.B. 1949, Shepherd College
Abbot, Robert Tucker	Md.	Adams, James Rowe
B.S. 1946, Harvard University		Adams, John William
M.S. 1949, The George Washington University		Adams, Lynn Dell
Abdulla, Mahammad	India	Adams, Melrose Buster
A.B. 1941, LL.B. 1942, University of Madras, India		Adams, Nate Lavender II
Abel, Joseph Henry, Jr.	D.C.	A.B. 1948, Washington and Lee University
Abel, Margaret Ann	Va.	Adams, Paul Vernon
Abelton, Maria Luisa	Cuba	Adams, Robert Lazenby
A.B. 1941, The George Washington University		A.B. 1952, University of Pennsylvania
Abelson, Joan Ruth	Md.	Adams, Vilas Fox
Abelson, Myron Herbert	Md.	Adams, William Rule, Jr.
A.B. 1952, University of Connecticut		A.B. 1951, Stanford University
Abelachien, Patricia Ann	Va.	Adamson, Roy Power
B.S. 1952, University of Virginia		Adie, Julia Mildred
Abernathy, John E.	D.C.	Adkins, Bradley Wayne
Abel, George F.	Wash.	Adler, Helen Claire
Abing, Gerald Vernon	W.Va.	Adler, Leonard
Abraham, Albert Frederick	Va.	A.B. 1950, Hunter College
Abland, Charles David	Okla.	Adrian, Donald Keith
A.B. 1952, University of Oklahoma		Ady, Robert Melvin
Aboul Kacir, Kamal Mohamed	Egypt	B.S. 1950, Moremouth College
Licence on Dent 1943, University of Faisal I, Egypt		Aegerter, Richard Edward
Abraham, Albert Frederick	Va.	B.S. Agr. Eng. 1948, B.S. in C.E. 1950, Utah State Agricultural College
Abraham, David	Md.	Agnell, Vincent Rocco
Abrahamson, Melvin	Md.	Agnoni, Linda Elmer
Abraham, Jennie	N.Y.	Agnosti, Angela Frances
Abraham, Yehuda Hillel	Md.	Agnostick, Ronald Medill
A.B. in Genet. 1951, The George Washington University		Alaenen, Robert
Abrahamson, Robert George	D.C.	A.B. 1946, Teheran University
Abrahamson, Anthony Joseph	Va.	Abern, John Francis
B.S. in C.E. 1950, College of the City of New York		B.S. 1949, Lehigh University
Abraham, Safiya	N.Y.	Abern, Willa Satterfield
Aust, Kungun	D.C.	B.E. 1947, University of Toledo
Accevedo, Fernando	Md.	Ahlberg, Richard Charles
B.S. 1952, University of Maryland		A.B. 1947, Wesleyan University
Acker, Henry L. Dean	D.C.	A.M. 1948, Columbia University
Ackerly, Robert Louis	Md.	Alexis, Gust Hans
Id. B. 1950, The George Washington University		Acker, Richard Louis
Ackerman, Margaret Brown	Va.	B.S. in F.E. 1951, Cornell University
Acree, Myrtle Eason	Va.	Akerman, Gisella Eva
A.B. 1931, Randolph-Macon Woman's College		Algren, Martha Olette
Adama, Barbara	Va.	A.B. 1953, Wellesley College
Adama, Beulah Joan	Va.	Albano, Eugene
Adama, Boyce Myrie	Va.	Albano, Carmen Amelia
Adama, Carlton Rolla	Texas	A.B. 1951, Trinity College, D. C.
B.S. 1940, Naval Academy	D.C.	Albert, Alfred Lobe
		Albert, Daniel
		Albert, Harold Franklin
		B.S. 1950, Mahlenberg College
		Albright, Ireland Brent, Jr.
		Alden, Robert Ames

Alderson, Wilbur Stanley	D.C.	Allen, Robert Brooke	Md.
Alemany, Norah Elvira	Calif.	A.B. in Govt. 1951, The George Washington University	
Alembik, Aaron Isaac	Va.	Allen, Scott	Va.
B.S. 1953, Georgetown University		Allen, Sidney, Jr.	Va.
Alen, Peter J.	Mont.	B.S. 1942, Michigan College of Mining and Technology	
B.S. 1942, Montana State University		Allen, Thomas Howard	Va.
Alex, Daniel G.	Mass.	Allen, Vera Ann	Wash.
B.S. 1950, University of Massachusetts		Allender, Thomas	Va.
Alexander, Aaron David	D.C.	Alley, Barbara Mae	Va.
B.S. 1948, College of the City of New York		Alley, Lehman Murray	Ala.
Alexander, Beverly Jane	D.C.	Alling, Anne Priscilla	D.C.
Alexander, Charles Pyskach	Colo.	Allinger, Dorothy Ann	Md.
A.B. 1950, University of Denver		A.B. 1951, The George Washington University	
Alexander, David Ord	D.C.	Allmont, Rene Charles	N.Y.
Alexander, Delores	W. Va.	Almeida, Virgil Anthony	Va.
Alexander, Earl William	D.C.	Almosa, Felicia A.	D.C.
Alexander, Howard Newman	Wash.	Alpher, Norman Stanley	D.C.
A.B. 1946, University of Washington		Alspangh, Clarence Henry, Jr.	Va.
Alexander, Katherine Hamlin	R.I.	Aister, Caliste Jay	Ill.
Alexander, Lenore Sue	Va.	B.S. 1948, Massachusetts Institute of Technology	
Alexander, Mar Belva	Calif.	Alten-witz, Ralph	D.C.
Alexander, Ronald McKenzie	Md.	A.B. 1948, University of Iowa	
A.B. in Govt. 1951, The George Washington University		Althoff, William Thomas	Md.
Alexander, Samuel Efram	Md.	Altman, Ruben	Va.
Alexander, Thomas Goodwin	Va.	Altshuler, Morton	D.C.
B.S. 1950, University of Maryland		Altzoller, Norman	Conn.
Alexander, William Marshall	Md.	B.S. 1950, M.S. 1951, The George Washington University	
B.S. 1940, M.S. 1951, Oregon State College		Amaral, Ivan Marcondes	Md.
A.M. 1951, Pennsylvania State College		Amatal, Ivo Magallanes	Md.
Alexon, John Kosea		Ambled, Donald Theodore	Pa.
Alex, Roger William	D.C.	Ames, Barbara Anne	Va.
Aven, Wade Sterling	Calif.	Ames, Katherine	Vt.
Aziz, Anna Debra	Calif.	Ames, Phyllis Clare	D.C.
A. Hachimi, Hassan Mahmood	Mann.	Ames, Walter Donald	N.Y.
Law degree in Law 1940, Baghdad Law College	Iraq	B.S. 1945, Pennsylvania State College	
Ali, Talat Ansal		Amos, Iris Elizabeth	D.C.
Ali, Beverly Bassett	D.C.	A.B. 1949, Western Maryland College	
A.B. 1949, A.M. in Govt. 1951, The George Washington University	La.	Amos, William Dale	D.C.
Allen, Virginia Hartman		Amsterdam, Arnold A.	D.C.
Allen, Roy David	D.C.	Amstover, Arthur Theodore	Md.
Allen, Helen P.	D.C.	B.S. 1952, Maryland State Teacher's College, Pikesburg	
Allen, Albert Conner	D.C.	Anastasiades, Plato	Ohio
Allen, Alvin David	D.C.	Andersen, Allen Frederick	Va.
Allen, Arnold Oral	D.C.	Andersen, Barrett Christian	Calif.
A.B. 1950, University of Nebraska	Nebr.	A.B. 1951, San Jose State College	
B.S. 1940, East Texas State Teachers College	Va.	Andersen, Donald George	Nebr.
Allen, Diana Lee		A.B. 1942, University of Nebraska	
Allen, Duane Dale	Va.	Andersen, Hanson Roy	Md.
Allen, Edward Clayton	D.C.	Andersen, Stephen Fox, Jr.	D.C.
A.B. 1940, Gettysburg College		Andersen, Allen William	Md.
Allen, Elizabeth Josce	Md.	Andersen, Arthur James	D.C.
A.B. 1952, Montana State University		Andersen, Blanche Arvetta	D.C.
Allen, Grace Alexander	D.C.	Andersen, Betty Lou	Va.
A.B. 1952, Montana State University	Md.	Andersen, Beniah Robinson	Va.
Allen, Hugh Arthur, Jr.	Va.	B.S. 1942, Randolph College	
Allen, Joseph Henry, Jr.	D.C.	Andersen, Carl Robert	D.C.
Allen, LaVerne	D.C.	Andersen, Chester Marion	Md.
Allen, Mary Alice	D.C.	A.B. 1951, Ohio Wesleyan University	
Allen, Neil Turner, Jr.	N.C.	Anderson, Cose Millard	D.C.
A.B. 1952, University of Texas	Tex.	Anderson, David Carver	Fla.
Allen, Phyllis Johnson		B.S. 1952, University of Illinois	
Allen, Richard Jackson	Va.	Anderson, Donald Kinnear	Ohio
B.S. 1953, University of Maryland	Va.	A.B. 1952, Yale University	
		Anderson, Dorothy Jean	Va.
		Anderson, George Harold, Jr.	Ariz.
		A.B. 1951, The George Washington University	

Anderson, Helen June	Kans.	Angevine, Walter King	D.C.
Anderson, Helen Margaret	Md.	Angle, Clarence Elden	Md.
A.B. 1930, The George Washington University		Angleton, Cicely d'Antremont	Va.
Anderson, Helen Sybil	D.C.	A.B. 1947, Vassar College	Md.
Anderson, Jalmar L.	Md.	Anglin, Jack Denzal	D.C.
A.B. 1951, Syracuse University		Anglin, Samuel Williams	Ala.
Anderson, Jean Alice	Conn.	Anglin, William U.	
Anderson, John Ford	D.C.	B.S. 1950, A.M. 1952, University of Alabama	D.C.
Anderson, Joseph Lenouch	S.C.	Angorn, Janice Lee	D.C.
B.S. in M.A. 1942, Oberlin College		Ankers, John Edward	Md.
Anderson, Kenneth Arthur	Md.	Annis, Helen Woodburn	Fla.
Anderson, Lennart A.	Va.	B.S. 1930, Muskingum College	
B.S. 1951, Upsala College		Ansbacher, Lewis	
Anderson, Leo Elbert	Mass.	A.B. 1947, LL.B. 1951, University of Florida	W.V.
Anderson, M. Phyllis	D.C.	Ansell, Edward Orin	
Anderson, Martin	D.C.	B.S. in E.E. 1948, University of Wisconsin	D.C.
B.S. 1951, The George Washington University		Ansher, Bernard	D.C.
Anderson, Neil Albert	Minn.	Anstead, Robert James	Pa.
B.S. 1951, University of Minnesota		Anstons, Lucille Alberta	D.C.
Anderson, Nellie Carr	D.C.	Antholis, Cleo	Ala.
A.B. 1941, The George Washington University		Anthony, James K.	Ill.
Anderson, Norman Henry	D.C.	Antle, William S., Jr.	D.C.
B.S. 1946, M.S. 1947, University of Chicago		B.S. 1940, U.S. Naval Academy	D.C.
Anderson, Richard McLemore	Fla.	Anton, Angeliki Alice	
B.S. 1951, University of Florida		Antonelli, Francis Anthony	
Anderson, Robert Lee	Md.	A.B. 1952, The George Washington University	D.C.
Anderson, Robert Lloyd	D.C.	Antoniou, Eva Bessie	D.C.
Anderson, Sidney Dale	Del.	Antoniou, Lucy Denise	Md.
A.B. 1946, Syracuse University		Antons, Henry Joseph	D.C.
A.M. 1950, University of California		Aoud, Edmond	Va.
Anderson, William Bruce	Oreg.	Apelt, Armin Otto	
A.B. 1950, Stanford University		B.S. 1944, St. Mary's University of San Antonio	D.C.
Anderson, William Walter	Ill.	Apolloni, Adolpho Henry	Pa.
Andes, Mary Clarissa	D.C.	Aponick, Joseph Ronald	
Anders, Joseph Anthony	Md.	B.S. 1941, Pennsylvania State Teachers College, Bloomsburg	D.C.
Anders, Kenneth William	Md.	Appel, Helen Elizabeth	D.C.
Andrews, Clyde Cecil	Md.	Appel, Ruth Anne	N.M.
M.S. A.E. 1947, California Institute of Technology		Apperson, Donald D.	Calif.
Andrews, Forrest West	D.C.	Applegate, David Carl	
Andrews, James Nathan	W.Va.	A.B. 1950, University of California	Calif.
B.S. 1944, West Virginia University		Applegate, William Vale	D.C.
Andrews, Jean Chandler	D.C.	A.B. 1953, University of California	Pa.
A.B. 1952, University of North Carolina		Appleton, William Gerson	
Andrews, John Nelson	Va.	Appleton, Robert Bernard	
A.B. 1942, University of Maryland		B.S. in Ed. 1952, Pennsylvania State Teachers College, Slippery Rock	D.C.
Andrews, Katherine Helen	Md.	April, Gayla Ona	Md.
B.S. 1946, Western Reserve University		Apter, Mildred	D.C.
Andrews, Mary Catherine	Md.	Apre, Ronald Alan	Va.
B.S. 1944, Ohio State University		Arbogast, Jule Anne	Pa.
M.S. 1948, New York University		Archbold, William Cornell, Jr.	Md.
Andrews, Minerva Wilson	Va.	B.S. 1950, Syracuse University	
A.B. 1945, University of South Carolina		Archer, Glenn LeRoy	Ala.
LL.B. 1949, University of Virginia		A.B. 1951, Yale University	D.C.
Andrews, Nello David Sylvester	Ala.	Ard, James Henry	N.Y.
A.B. 1941, Vanderbilt University		Ardeeser, Mary Margaret	N.J.
LL.B. 1949, University of Virginia		Arent, Irene Mary	
Andrews, Norma Newman	D.C.	Arentman, Edward Sentman	
Andrews, Rebecca Elizabeth	D.C.	B.S. 1957, U.S. Naval Academy	
A.B. 1950, M.S. 1950, University of Georgia		M.S. 1943, Massachusetts Institute of Technology	D.C.
Andrews, William Clayton	N.C.	Argent, Russell Henry	
Andry, Walter Gilbert	Va.	A.B. 1952, Washington Missionary College	Greece
Anenson, Joyce Verlane	S.D.	Argyropoulos, Demetre Archia	
Angell, Lilyan Carole	D.C.		

Arma, James K. A.B. 1949, University of California at Los Angeles	D.C.	Atkins, John Dillard B.S. 1940, North Carolina State College A.M. in Ed. 1949, The George Washington University	Va.
Arko, Robert Lee	D.C.	Arkina, Phyllis Louise	D.C.
Arkins, Russell Anthony	N.Y.	Arkina, Virgil E. Bryan	D.C.
Armistead, Mary Ann	D.C.	Arkison, Winfield, Jr. A.B. 1948, Ursinus College	Md.
Armstrong, Mary Emma A.B. 1947, Oberlin College	Md.	Atlas, Alvin Simon	D.C.
Armstrong, Mary Jane	D.C.	Attrebery, Betty Jeanne A.B. 1952, Arizona State College, Tempe	D.C.
Arnold, Richard Merrill B.S. 1950, University of Idaho	Idaho	Attn, Evelyn Louise A.B. 1952, The George Washington University	D.C.
Arnold, Rosalie Bryant A.B. 1951, The George Washington University	Md.	Andra, William Vincent	D.C.
Arnold, Beverly Drue	Va.	Auerbach, Jack Albert	D.C.
Arnold, Daniel Clay	Va.	Auman, Anne Nichols	Va.
Arnold, Donald James	Md.	Austin, Carroll Wayne A.B. in Govt. 1953, The George Washington University	N.C.
Arnold, Lebanon Valley College	D.C.	Austin, Claude Allen	D.C.
Arnold, Gretchen Louise	Ga.	Austin, Edwin Cogswell	Va.
Arnold, Lucy	Pa.	Austin, George Kenneth	N.I.
Arnold, Marietta Fruit	Pa.	Austin, James Albert A.B. 1952, University of Southern California	Ariz.
Arnold, Phyllis A.B. 1949, University of Pennsylvania	D.C.	Austin, Joan Natalie	Va.
Arnoff, Howard	D.C.	Austin, Maude Savage B.S. 1940, Maryland State Teachers College, Salisbury	Va.
Arnoff, Ida Bernice	D.C.	Austin, Robert Earl B.S. 1950, Pennsylvania State College	Pa.
Arnson, Gerald Roy	D.C.	Avery, Robert Leroy	Iowa
Arnson, Lenora Mae	D.C.	Avin, Martin B.S. 1944, Brooklyn College I.L.B. 1947, Harvard University	N.Y.
Arret, Bernard B.S. 1941, College of the City of New York	N.J.	Awad, Joseph Frederick A.B. 1951, Georgetown University	Md.
Artek, Alma Arlene	Ohio	Awley, James Dewey	Fla.
Artemus, Claudio Edward	Va.	Asten, Albert Omer	Mass.
Artemus, Paul Florian B.F.E. 1950, Marquette University M.S. & F.E. 1951, Harvard University	Va.	Avapi, Cheevakapavanda Bhamava B.M.E. 1953, The George Washington University	India
Artschawsky, Frank	D.C.	Ayasan, Anna	D.C.
Asian, Lillian Arcine A.B. 1941, University of Massachusetts	Mass.	Ayrtaman, Reba	D.C.
Ashe, Clara Jane	Va.	Azal, Abdul Khaliq	D.C.
Ashe, Frank Melvin A.B. 1941, The George Washington University	Va.	Azz, Abdul Kadir B.S. 1953, Wilson Teachers College	D.C.
Ashe, Frank Melvin, Jr. A.B. 1941, The George Washington University	N.I.		
Ashe, Howard Edgar A.B. in Govt. 1953, The George Washington University	D.C.		
Ashe, Lester Maxwell, Jr. A.B. in Govt. 1949, The George Washington University	Va.		
Ashe, Norma M. B.S. 1941, Syracuse University	N.Y.		
Ashe, Maude Eleanor B.S. A.B. 1952, Lindenwood College	Wis.		
Ashie, Don A.B. 1941, University of Iowa	Calif.		
Ashie, Wallace Lortle A.B. in Govt. 1947, The George Washington University	Va.		
Ashie, Hane Alma	N.C.		
Ashie, Ray Lester	Va.		
Ashie, John Creel A.B. 1952, West Virginia University	Md.		
Ashie, Jessie M. A.B. 1945, Henderson State Teachers College, Ark.	N.D.		
Ashie, Geraldine Ramona	Md.		
Ashie, George	Calif.		
Ashie, Constance	Md.		
Atkins, Craig Starbuck, Jr.	Md.		

Bachrach, Morton Weisel	Va.	Bakon, Frederick Joseph	Mass
B.S. 1947, Roanoke College		Baker, Huda	1948
L.L.B. 1942, The George Washington University		Balak, Abraham Harry	Va.
Back, Kathryn Donnelly	Va.	A.B. 1950, Brooklyn College	D.C.
Backes, Mildred Amelia	Minn.	Baldwin, Alice Muriel	Va.
Backs, Dorothy Marie	Va.	Baldwin, Franklin Hunter	Wn
Bacus, Edith Genta	D.C.	Baldwin, James Leon	D.C.
Bacon, John William	D.C.	Baldwin, Virginia Arand	
B.S. 1950, Cornell University		A.B. 1940, B.S. 1941, University of Cincinnati	Ant
Baer, John Wilbur	Mass.	Balen, Harley Pat	
A.B. 1952, Harvard University		A.B. in Ed. 1951, Arizona State College	Va
Bagan, Michael	N.Y.		Ill
Barby, Eula Dotte	Va.	Balian, Berge	
B.S. 1944, University of Virginia		Balia, Theodore Lawrence	Mass
Bardon, Vincent Joseph	Mich.	B.S. 1941, U.S. Naval Academy	
Bahrer, Kathryn Jane	Md.	Ball, Charles H.	D.C.
Bahr, Robert Dennis	Wis.	A.B. 1952, Boston University	
B.S. 1950, University of Wisconsin		Ball, George Gill	
Rais, Mirza Taimur Ali	Canada	B.S. 1941, U.S. Naval Academy	Va
Bailey, Aubrey William	Md.	M.S. 1949, Harvard University	D.C.
Bailey, Barbara Adair	Va.	Ball, Hackett Graham	Md
Bailey, Ellen Pinckney	D.C.	Ball, Helen Elizabeth	Va
A.B. 1951, The George Washington University		Ball, Joseph James	
Bailey, J. Edgar	Pa.	Ball, Stuart Michael	Md
A.B. 1950, University of Pittsburgh		A.B. 1945, Lafayette College	
Bailey, Joseph Fortune	Pa.	Ballard, Jennings Fletcher	
Bailey, Marguerite Evelyn	Va.	A.B. 1942, East Carolina College	D.C.
Bailey, Milton Julius	D.C.	A.M. 1946, Columbia University	Va
B.S. 1949, University of Minnesota		Ballard, Leo	
Bailey, Nancy Hamilton	D.C.	Ballemee, Paul Richard, Jr.	
B.S. 1946, West Virginia University		B.S. 1949, West Virginia Institute of Technology	D.C.
Bailey, Virginia Roberta	N.C.	Ballew, Harry Lee	
Bain, Neil Howard	N.C.	A.B. 1951, University of North Carolina	Kv
Bain, Richard Gayle	Va.	Ballmann, Francis Xavier	
B.S. 1949, Columbia University		B.S. 1948, Georgetown University	Md
Bain, Herman Hensdel	Ala	Balorh, James, Jr.	D.C.
B.S. 1950, University of Alabama		Balshaw, Marie Elizabeth	D.C.
Bain, John Richard	Md.	Balster, Vernon Henry	
Baird, George Roscoe	D.C.	A.B. 1947, Concordia Theological Seminary	N.H.
Bakula, Victor Edward	D.C.	Balukovich, James Joseph	Ind
B.S. 1947, U.S. Coast Guard Academy		Balzer, Clayton Paul	D.C.
Baker, Alton Newcomer	N.Y.	Bamford, Evelyn M.	D.C.
A.B. in Govt. 1948, The George Washington University		Band, Bernard Alvin	D.C.
Baker, Arden	D.C.	Band, Marlene Eunice	Ant
Baker, Arlie Page	Md.	Banicovich, Frank	
B.S. 1951, University of Maryland		B.S. 1953, Arizona State College	Va
Baker, Carl Wilfred	D.C.	Banko, Andrew	D.C.
B.S. 1948, Ohio State University		Banks, Arthur Sparrows	Pa
Baker, Gordon III	N.J.	A.B. 1951, Cornell University	
Baker, Harold Leon	Tenn.	Banks, Joseph Bernard	
Baker, Henry D.	Calif	B.S. in C.E. 1953, Massachusetts Institute of Technology	Md
A.B. 1951, Pomona College		Banning, Bruce Cramer	N.I.
Baker, Lantho Dunton	Va.	B.S. 1952, Georgetown University	Mass
B.S. 1945, University of Miami		Baok, Stephan	Mich
Baker, Lawrence Keith	Va.	Bapiste, Mary	Md
Baker, Olga Ulbe	Va.	Baratone, Eugene Joseph	D.C.
Baker, Patsy Lee	D.C.	Barbee, Ruth Stone	
Baker, Peonie Horne, Jr.	Conn.	Barber, Donald E.	
Baker, Raymond Edward	Md	Barber, Lazelle Cooper	Ala
Baker, Robert Ellerson Francis	D.C.	B.S. 1948, East Texas State College	D.C.
Baker, Ruth Sinberg	Va.	Barber, Lloyd Morris	
Baker, Sheila Caswick	D.C.	Barber, Mary Alice	
Baker, Stanley Lester	Pa.	Barber, William Joseph	
Baker, Virginia Marie	Va.	A.B. 1949, Harvard University	
A.B. 1944, The George Washington University		A.B. 1951, Oxford University, England	
A.M. 1945, Johns Hopkins University	Pa.		
Baker, Waldon Lee	N.J.		
Baker, William Francis, Jr.			

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Battani, Victor, Jr. B.C.E. 1953, The George Washington University	D.C.	Beatty, Sara	D.C.
Battle, Avis Forand	Va.	Beauchamp, Glenda Clare	Va.
Bau, Deanna	D.C.	Beauchamp, Jeanne Elizabeth A.B. 1944, Wheaton College	D.C.
Baube, Ian Gaston	D.C.	Beauchamp, Martha Hawkins A.B. 1941, The George Washington University	Fla.
Baudino, Eleanor Frances	Md.	Beaumont, John G. B.S. 1952, Florida Southern College	Va.
Bauer, Edward Victor	N.Y.	Beauregard, Joseph Roger A.B. 1952, University of Vermont	D.C.
Bauer, George Wendell, Jr.	Calif.	Beaver, Carol Westbrook	Md.
Bauer, Peter A. A.B. 1947, Marietta College	N.Y.	Behar, Arthur Maurice	Ill.
Baughman, Anne O'Donnell	Va.	Bechtoldt, Cletus Joseph B.S. 1950, The George Washington University	D.C.
Baughman, Arden Eugene	Ohio	Beck, Harold Russell B.S. 1951, Case Institute of Technology	D.C.
Bauk, Stephan	N.J.	Becke, Edward	D.C.
Baum, Richard Allen	D.C.	Becker, Alethia Hale	N.Y.
Baumann, Donald Francis	Calif.	Becker, Arlene Berlin	Md.
Baumann, Walter Lawrence	D.C.	Becker, Earl Franklin, Jr. B.S. 1951, Muhlenberg College	D.C.
Baumgardner, Pearly Lorenzo A.B. 1927, University of North Carolina	Va.	Becker, Joseph Azula A.B. 1950, A.M. 1952, The George Washington University	D.C.
Baumgartner, Jack Edward	Va.	Becker, Roland Wayne	Fla.
Baute, Eloise Dorothy	Mo.	Beckett, William Wade B.C.E. 1948, The Citadel	Canada
Baxter, Charles Sayre, Jr.	D.C.	Beckler, Caroline Pollard A.B. 1951, University of Maine	Md.
Baxter, David Louis A.B. 1957, St. John's University, N.Y.	Md.	Beckler, Seymour	Md.
Baxter, Ronald Henry	D.C.	Beckman, Victor Rudolph B.S. 1952, University of Wisconsin	Fla.
Bayer, Bruce LeRoy B.S. 1951, University of Wisconsin	Wis.	Beckwith, Harriet Schiff A.B. 1948, The George Washington University	Md.
Bayer, Frederick Merkle	Va.	Bedford, Dolores Nancy	Calif.
Bayer, Ralph Robertson	Ohio	Bedynek, Julius Ludwig, Jr.	Va.
Baylor, Ohio State University	Va.	Becker, Bruce Lloyd A.B. 1952, Michigan State College	Fla.
Bayliff, Calvin Orman	D.C.	Beeler, Robert Gilman	Va.
Bayne, James Henry	Va.	Bears, Alice Tharpe A.B. 1951, Huntingdon College, Ala.	Ore.
Bayne, Harry	Va.	Beese, Edward Thomas	Utah
BeAbout, Edgar Guy	Ill.	Beesley, Wilford Angus, Jr. A.B. 1952, University of Utah	Pa.
Beach, David Jennie	D.C.	Begony, Margaret	Conn.
Beach, Frank Hamilton	Md.	Begg, Eric Kirk, Jr. A.B. 1949, Wesleyan University	D.C.
Beach, Lillian Estelle B.S. 1941, Howard College	Va.	Begg, B.S. 1950, U.S. Coast Guard Academy	
Beach, Robert Andrew B.S. 1951, University of Maryland	Md.	Begnoche, Annette Doris A.B. 1951, Dunbarton College of the Holy Cross	Va.
Beach, Spencer Buchanan B.S. 1950, Iowa State College	Ill.	Behrens, Carl Frederick A.B. 1953, University of Chicago	Mont.
Beard, James Ralph B.S. 1949, L.L.B. 1951, University of Alabama	Ala.	Behrens, Charles Donald A.B. 1950, Montana State University	D.C.
Beale, Edgar Joseph	Ky.	Behrens, Nicklas Theodore	D.C.
Beamer, Alan Leroy B.S. 1955, Pennsylvania State Teachers College, California	Va.	Beilman, Robert Allen	Mo.
Benn, Gene Cover B.S. 1951, University of Maryland	D.C.	Bein, Robert	D.C.
Bean, Keith Roger B.S. 1951, University of Utah	Utah	Beisel, Edward Lincoln	D.C.
Bear, Elwood Leroy, Jr.	Va.	Beiser, Seymour	D.C.
Bear, Frederick James B.S. in B.A. 1947, Miami University	Va.	Beita, William Edward	D.C.
Bear, Sandra Ellen	Va.	Beitzell, Edwin Warfield	Va.
Bearden, Erwin Donald	Ala.	Belanger, Robert Joseph	N.Y.
Beardsley, James Henry	Md.	Belice, Michael Martin	
Beary, Franklin David B.E.E. 1941, Duke University	Va.	Belkin, Arlette Turner	Mass.
Beasley, Derwood Marice	Texas	Belkin, Leonard B.M.E. 1950, Cooper Union	
Beasley, Edward Evans B.S. 1944, U. S. Naval Academy	Wash.	Bell, Brenda Bennett	
Beasley, Elizabeth Shell	Va.		
Beattie, Margot	Va.		
Beatty, George Calvin	Va.		
Beatty, John von Ohlen	Va.		
Beatty, Richard Wendland	Va.		

Bell, Donald Raymond A.B. 1948, College of Wooster	Kans.	Berger, Richard Alan	N.Y.
Bell, Earl Charles	Ill.	Bergman, Ludwig Clyde	Pa.
Bell, Forrest Horatio	Va.	Bergman, Melvin John	Va.
Bell, James Herbert	Va.	Bergmann, Fredrick Louis	Ind.
Bell, Joseph Edison	Va.	A.B. 1937, Washburn Municipal University of Topeka	
Bell, William Howard	W.Va.	A.M. 1939, State College of Washington	
Bell, William Salisbury	Md.	Beymann, Robert Theodore	Md.
Bellavance, Roland Gregory	N.H.	B.F.E. 1941, University of Missouri	
Beller, Catherine Marie	D.C.	Berga, Robert Austin	Ill.
Beller, Margaret Anne	Md.	B.S. 1935, U. S. Naval Academy	
Bellinger, Edgar Thomson	Md.	Berk, Carolyn Schilian	Md.
A.B. 1951, Haverford College		Berkley, Joy Underwood	W.Va.
Bellucci, Vince	D.C.	Bert, Viva Ada	N.Y.
Belmont, William Robert	D.C.	Berliner, Hans Jack	D.C.
A.B. 1952, DePaul University		Berman, Edward Bernard	Md.
Belt, Charles Vernon	Md.	A.B. 1948, A.M. 1950, Ph.D. 1951, Harvard University	
Beltz, Elizabeth Ann	Md.	Berman, Gloria Victoria	D.C.
Beltz, Herbert George	D.C.	Berman, Leon F. A.	Va.
B.S. 1939, Southwest Missouri State College		A.B. 1951, Michigan State College	
Bender, Fred William, Jr.	Mont.	Bernadet, Miguelina	D.C.
Bender, Patricia B.	D.C.	Bernard, Dona	D.C.
Bendish, Thomas Reilly	N.Y.	Bernard, George Vincent	Va.
Bengason, Gertrud Adeline	Sweden	A.B. 1949, Lynchburg College	
Benson, Barbara Louise	Va.	Bernard, Joseph Alfred	Va.
Bennett, Daniel Arthur	Pa.	Bernard, Marylou	Md.
M.F. 1924, Stevens Institute of Technology		Berner, Paul Joseph, Jr.	
LL.B. 1925, Dallas Law School		B.S. 1950, Pennsylvania State College	
Bennett, Edward Ferris III	D.C.	Bennett, Seymour	D.C.
A.B. 1951, University of Maryland		Bernick, Joseph Charles	D.C.
Bennett, Jack Franklin	Md.	Bernier, Joseph Runco	Conn.
A.B. 1944, Yale University		B.S. 1951, Teachers College of Connecticut	
Ph.D. 1951, Harvard University		Bersikow, Rodger Douglas	Conn.
Bennett, Martin	Md.	A.B. 1949, Clark University	
B.S. 1949, A.M. 1950, Rutgers University		Bernkopf, Walter Charles	D.C.
Bennett, Mary Frances	Va.	B.F.E. 1949, University of Denver	
Bennett, Richard Lee	Pa.	Bernot, Joseph John	D.C.
A.B. 1949, Radcliffe College	Md.	B.S. in P.E. 1950, The George Washington University	
Benson, Mary Louise	Va.	Bernstein, Jerome Seymore	D.C.
Benson, Robert Lynn	Va.	Bernstein, Joseph	D.C.
Benson, Virginia Noel	Va.	Bernstein, Paul	D.C.
Benson, Wilbur Earle	D.C.	Bernstein, Philip	D.C.
A.B. & Govt. 1951, M.B.A. 1952, The George Washington University		B.S. 1952, University of Maryland	
Benz, Charlotte Gray	Va.	Bernstein, Stuart Paul	N.Y.
A.B. 1951, Mary Washington College		A.B. 1951, New York University	
Berardo, Roland Almond John	R.I.	Berrian, Mae Adele	Mo.
B.S. 1951, M.S. 1952, American University		Berrio, Esther Maria	D.C.
Berban, George Vernon	N.Y.	Berry, Charles Redmon	Texas
Berbaum, Sue Allison	Va.	Berry, Donald Raymond	Va.
Berenson, Nella Mercedes	D.C.	Berry, Elizabeth Beatrice	Pa.
Berry, Justin Alvin	Ohio	Berry, Estelle Davis	Va.
B.S. 1951, Indiana University		Berry, Seymour	Md.
Berg, George John	D.C.	A.B. 1951, The George Washington University	
Berg, Irving	Mass.	Berry, William Orville	D.C.
A.B. 1950, University of Massachusetts		Berryman, Ruth Ena	D.C.
A.M. 1951, Boston University		Berr, Marilyn	D.C.
Berg, Richard Munger	Texas	Beist, Herbert Joseph	D.C.
A.B. 1951, Rice Institute		Bertner, Harry William	Va.
Bergazin, Sandra Dee	D.C.	Bertons, Louis	Ill.
Bergner, Alan Burton	D.C.	B.S. 1915, Southern Illinois University	
Bergner, Clair	D.C.	A.M. 1947, University of California at Los Angeles	
B.S. 1950, Wilson Teachers College		Bertram, Freida Sturm	Va.
Berger, Florence Bernice	D.C.	A.B. in Ed. 1953, The George Washington University	
Berger, Harrison Andrew	Va.	Berzof, Harold	Va.
Berger, Joan Edith	D.C.	M.S. in Ch.E. 1951, Johns Hopkins University	
Berger, Leonard	N.Y.		
B.S. 1953, Queens College			

Besios, Sheridan Esteban A.B. 1952, The George Washington University	D.C.	Bing, John Henry Bingham, Robert Harold A.B. 1941, Yale University	Ill. N.H. Pa.
Best, Donald Wright	Va.	Bingner, Janet Louise B.S. 1941, University of Pittsburgh	D.C.
Best, Francis George	Mich.	A.M. 1947, University of Maryland	D.C.
Best, Harold Lloyd A.B. 1949, A.M. 1951, The George Washington University	Va.	Binney, George Thomas	N.J.
Best, Joan Carolyn	D.C.	Binstock, Richard Martin	Mich.
Best, Lee James A.B. 1919, Duke University	Va.	Birch, Jean Carol A.B. 1952, Principia College	Va.
Bestwick, Roger Paul	Va.	Birchall, Jeanne Harriet	D.C.
Betsell, Richard Wilson	Va.	Bird, Mary Katherine	D.C.
Betsack, Thomas E.	Pa.	Birmingham, Thomas Harlan	D.C.
Bettner, Jerome Paul	D.C.	Birnbaum, George A.B. 1941, Brooklyn College	Md.
Betts, Arthur Laverne	Wa.	M.S. 1949, The George Washington University	
Bettwy, David Strayer	Pa.	Birnbaum, Henry A.B. 1945, A.M. 1946, New York University	Md.
Betzler, John Richard A.B. 1950, The George Washington University	Va.	Birnbaum, Herbert B.S. 1950, Johns Hopkins University	Va.
Bevan, James Goodwin	Texas	Bisbee, Donald Mayo	Miss.
Beyer, Carolyn Louise	D.C.	Bishop, Christine Elizabeth	Va.
Bharasara, Suney LL.B. 1944, University of Thammasat, Thailand	D.C.	Bishop, Mary Louise	Md.
Bianchini, William Robert	Md.	Bishop, William Hanson, Jr.	Conn.
Bicknell, Beverlee Ann	D.C.	Biskin, Allen Raymond B.S. 1950, University of Maryland	Idaho
Biddlecome, Robert Edward	N.J.	Bitondi, Grace Marilyn	Md.
Biehl, George Henry	Md.	Bitton, Francis B.S. 1951, Ricks College	Kans.
Biehl, Harry William Alvin A.B. 1950, University of Maryland	Va.	Bjork, Carl Evor, Jr.	Calif.
Bienia, Walter John	Md.	Blachman, Phyllis Rae	Va.
Bier, David Lawrence	D.C.	Black, Arlene Jane B.S. 1947, Kansas State College	W.Va.
Bierbauer, James Joseph B.S. 1947, LL.B. 1949, Georgetown University	Nehr.	Black, George Alexander A.B. 1939, University of California	D.C.
Bieren, Audrey Orietta	Va.	Black, Robert Russell B.S. 1949, Syracuse University	D.C.
Bierly, Robert Foust A.B. 1941, University of Maryland	Md.	Blackburn, Ruth A.B. 1949, Marshall College	D.C.
Bierman, George Raymond	Va.	Blackler, Raymond	
Biesmann, Alfred Ernest, Jr.	D.C.	Blackford, Virginia Lee B.S. 1949, American University	D.C.
Biesecker, Harold Woodall B.S. 1940, U. S. Naval Academy LL.B. 1940, The George Washington University	D.C.	M.S. 1951, The George Washington University	D.C.
Bisenthal, Eugene Benjamin	Md.	Blackington, Lester Newton	D.C.
Bischoff, Louise Ann	D.C.	Blackstone, Joan Elizabeth	N.Y.
Bischoff, Mabelle DeWitte B.S. 1951, Wilson Teachers College	Mont.	Blackmon, Charles Mason B.S. 1926, College of Charleston	Calif.
Biggs, Leland Melvin	D.C.	Blackmon, Leon Charles A.B. 1951, Bates College	Md.
Bigsby, Vernon L.	Ill.	Blackstock, Isabel G. A.B. 1949, University of Utah	D.C.
Bihl, Edwin Arthur B.S. 1950, University of Illinois	Va.	A.M. 1941, University of Michigan	D.C.
Bikle, Anne Seel	Va.	Blackwelder, Theodore Fisher B.S. 1952, Roanoke College	D.C.
Bilger, Donald Earle B.S. 1951, University of Colorado	Va.	Blackwell, James Parker	D.C.
Billar, James Edward	N.Y.	Blackwell, Maurice Jennings A.B. 1948, University of Georgia	D.C.
Bilera, Richard Dominic B.S. 1950, Columbia University	Md.	M.S. 1949, University of Tennessee	Va.
Billingsale, Ella Trosel	Va.	Blackwell, Patricia Ann Blade, Genevieve Jean	D.C.
Billingsley, Cecily Virginia	Md.	Wyles, Beverly Layton	Utah
Billingsley, Hilda Ehman	Mass.	Blasler, Betty Jean	
Bilman, Kathryn Luella B.S. 1941, University of New Hampshire	D.C.	Blasler, Willard William B.S. 1934, A.M. 1940, University of Wisconsin	Me.
Bilman, A.M. 1937, Columbia University	D.C.	Blavier, Channing Davis	D.C.
Bilman, Ceronis	D.C.	Blatt, Charles Robert	D.C.
Bilmanis, Milda Emilija	D.C.	Blatt, James Colbert	
Bindemanis, Edgar Leopold	Ind.	Blatt, Richard J.	
Binder, Paul Julius B.E.F. 1950, Purdue University	Va.		
Binford, Marjorie, Lynette			

Blake, Doris Sidney A.B. 1930, Radcliffe College A.M. 1931, The George Washington University	Va.	Bluestone, Abraham A.B. 1947, The George Washington University	D.C.
Blake, John A. Edward B.S. 1931, Roanoke College	Md.	Blum, Bruce Ivan B.S. 1931, Rutgers University	N.J.
Blake, Jane Rayston B.S. 1931, University of Michigan	Va.	Blum, Carol Eleanor A.B. 1931, University of Maryland	D.C.
Blake, Richard William, Jr. A.B. 1931, University of Michigan	N.Y.	Blum, Daniel B.M.E. 1944, College of the City of New York	D.C.
Blase, Stewart Penfold B.S. 1931, University of Maryland	Va.	Blum, Fred Gabriel, Jr. B.S. 1936, University of Wisconsin	Wis.
Blase, William Robert B.S. 1932, University of Maryland	Md.	Blum, Joseph B.S. 1940, College of the City of New York	D.C.
Blaschke, Jean B.S. 1932, University of Maryland	D.C.	Blum, Sanford Jay A.M. 1948, The George Washington University	Va.
Blaser, Martin Joseph A.B. 1932, Swarthmore College	D.C.	Blume, Adelaide A.B. 1932, The George Washington University	D.C.
Blatt, Anna Delarochie B.S. 1932, Swarthmore College	D.C.	Blumenthal, Isadore David B.E.E. 1949, Case Institute of Technology	Ohio
Blatt, Francis John, Jr. B.S. 1932, Swarthmore College	Va.	J.D. 1933, The George Washington University	
Blatt, John Dale B.S. 1932, Swarthmore College	Va.	Blumenthal, Lawrence Mason A.B. 1939, A.M. 1940, Bucknell University	N.J.
Blatt, Susan Hannibal B.S. 1932, Swarthmore College	D.C.	A.M. 1942, Harvard University	D.C.
Blatt, Alice B.S. 1932, Swarthmore College	D.C.	Blumenthal, Violet Smith Blumen, Emily Selma	D.C. Okla.
Blatt, Fred Farr B.S. 1932, Swarthmore College	D.C.	Blumen, Gordon Franklin Bodkin, Ruth Marie	D.C. Pa.
Blatt, Alvin Cleon B.S. 1932, Swarthmore College	D.C.	Bodkin, Carl Theodore Bohler, Jesse Clara	D.C. N.Y.
Blatt, Howard Allen B.S. 1932, Swarthmore College	Md.	A.B. 1934, The George Washington University	
Blatt, Mildred Louise B.S. 1932, Swarthmore College	N.C.	Boehm, William Robert B.S. 1940, U.S. Naval Academy	Ohio
Blatt, Thompson III B.S. 1932, Swarthmore College	Va.	Boes, Roderick Hans Boesch, Pauline Kruppner	D.C. Va.
Blatt, M. J. Bell B.S. 1932, Swarthmore College	D.C.	B.S. 1925, Illinois State Normal University	
Blatt, Helen Carol B.S. 1932, Swarthmore College	D.C.	Bopachoff, Anna Celia Bogdan, Andrew	D.C. Pa.
Blatt, Robert Frank B.S. 1932, Swarthmore College	D.C.	Boyer, Jackson Lozier, Jr. A.B. 1929, Cornell College	Va.
Blatt, Sam David B.S. 1932, Swarthmore College	N.Y.	Boggs, Eleanor Anne Bowie, Homer Tillman	D.C. N.Y.
Blatt, William Peter B.S. 1932, Swarthmore College	D.C.	Bowser, Nathan Bowseroff, George Benjamin	D.C. N.I.
Blatt, George B.S. 1932, Swarthmore College	Va.	Bogye, Jesse Parker A.B. 1930, University of Maine	Md.
Blatt, Daniel Webster B.S. 1932, Swarthmore College	Md.	A.M. 1931, University of Maryland	
Blatt, Charles Robert B.S. 1932, Swarthmore College	D.C.	Bohan, John Patrick A.B. in Govt. 1931, The George Washington University	Pa.
Blatt, Viola Probert B.S. 1932, Swarthmore College	D.C.	Bohan, Joseph James A.B. in Govt. 1931, The George Washington University	Md.
Blatt, Fredmont College B.S. 1932, Swarthmore College	Pa.	Bohan, Paul Francis Bushman, Luther Beecher	Md. Md.
Blatt, Mary Washington B.S. 1932, Swarthmore College	Calif.	B.S. 1932, M.S. 1939, University of Tennessee	
Blatt, Samuel Carter B.S. 1932, Swarthmore College	Va.	Bohmer, Alois J.D. 1936, University of Prague	D.C.
Blatt, Hazel B.S. 1932, Swarthmore College	Md.	Bohmer, Norman Ray Bohmer, Stanley Paul	D.C. D.C.
Blatt, Howard Leslie B.S. 1932, Swarthmore College	Pa.	Bohmer, Alfred Paul B.S. 1941, Pennsylvania State College	Pa.
Blatt, Robert Lee B.S. 1932, Swarthmore College	Va.		
Blatt, William Lee B.S. 1932, Swarthmore College	D.C.		
Blatt, University of North Carolina B.S. 1932, Swarthmore College			
Blatt, Mary B.S. 1932, Swarthmore College			
Blatt, William Thomas B.S. 1932, Swarthmore College			
Blatt, St. Vincent College B.S. 1932, Swarthmore College			
Blatt, George A. B.S. 1932, Swarthmore College			
Blatt, University of California B.S. 1932, Swarthmore College			
Blatt, Robert B.S. 1932, Swarthmore College			
Blatt, John B.S. 1932, Swarthmore College			
Blatt, Leanne B.S. 1932, Swarthmore College			
Blatt, Victor Irving B.S. 1932, Swarthmore College			
Blatt, Hope Dunwood B.S. 1932, Swarthmore College			
Blatt, Tom Brown B.S. 1932, Swarthmore College			
Blatt, Joseph B.S. 1932, Swarthmore College			
Blatt, Brown University B.S. 1932, Swarthmore College			
Blatt, College of the City of New York B.S. 1932, Swarthmore College			
Blatt, Trinity University B.S. 1932, Swarthmore College			
Blatt, Stewart B.S. 1932, Swarthmore College			
Blatt, Karl Neil B.S. 1932, Swarthmore College			
Blatt, Allen Eden B.S. 1932, Swarthmore College			
Blatt, Donald B.S. 1932, Swarthmore College			

Bolin, George Aristotle	D.C.	Boone, Wilfred Harryman	Va.
B.S. 1951, Franklin and Marshall College		B.E.E. 1910, Mississippi State College	Thailand
Boissonneault, Lorette Lucy	Canada	Boonparlit, Watn	Md.
Boissy, Joseph Philip	Mass.	Boor, Samuel Valdimir	Md.
A.B. 1941, Dartmouth College		Boord, Robert Lennis	D.C.
Bosvert, Gerald Elton	Md.	A.B. 1940, Washington and Jefferson College	Va.
Bosvert, Harold Vincent	Md.	Boorstein, Alvin Jack	Conn.
Ph.B. 1940, Notre Dame of Maryland College		Booth, Charles Theodore	
LL.B. 1947, Catholic University of America		A.B. 1951, University of Richmond	
Boland, John William	D.C.	Bosch, John George	Va.
Boland, Joseph Francis	N.J.	B.S. 1946, Massachusetts Institute of Technology	
Boland, Margaret Anne	N.Y.	Booth, Margaret Sheild	Va.
A.B. 1950, Nazareth College		B.S. 1942, Richmond Professional Institute	Va.
Boles, Roger	Calif.	Booth, Rexford George	Va.
A.B. 1949, Stanford University		Booth, Edward Milton	N.Y.
Boley, Robert Eugene	D.C.	Bopp, Helen Margaret	
A.B. 1945, The George Washington University		B.S. 1948, New York State Teachers College, Brookport	Fla.
Bolka, Robert William	D.C.	Borbridge, Dorothy Ann	D.C.
Bollenbacher, Katharina	D.C.	A.B. 1949, University of Florida	
A.B. 1934, A.M. 1936, University of Arkansas		Bordello, Richard Ainsworth	La.
Bolling, Lida Ling	Texas	A.B. 1942, University of Michigan	Calif.
B.S. 1946, Tsing University, China		Bordelon, John James	D.C.
Bolt, Gerald Edith	Ala.	Borden, Beverly Spaulding	
Boltz, Donald Arthur	S.D.	Borden, Tamis Wilson	D.C.
Bonawit, George Owen	Md.	A.B. 1941, University of Richmond	
Bonbrist, Barbara Ann	Md.	Bordwell, Theresa Bell	Va.
Bonbrist, Helen Constance	Md.	Borger, Henry Miller	D.C.
Bond, Russell Evans	Md.	Borges, David Knight	Md.
A.B. 1941, Washington Missionary College		Borisavljevic, Gordana	Minn.
Bondareff, Erwin Allen	D.C.	Bornes, William Alfred	
B.S. in Pharm. 1952, The George Washington University		A.B. 1949, St. Pauls Seminary, Minn.	N.H.
Bondareff, Mally	Md.	Borra, Nicholas, Jr.	D.C.
Bonera, Joseph Edward	Va.	Borodny, Frank Joseph	D.C.
Bonfield, Charles Thomas	Va.	Boruck, Ronald Jack	Va.
Boni, Abram Joseph	R.I.	Bortniker, Ernest	D.C.
A.B. 1952, Providence College		Bosin, Bernice May	Va.
Bonilla, Lempien Paselao	Honduras	Bosmans, Thomas Constantinus	
A.B. 1951, The George Washington University		Boss, Evelyn Emma	D.C.
Bonin, Austin Jerome	Va.	A.B. 1936, University of Oklahoma	Va.
B.S. 1934, College of the City of New York		Bostick, James Lynn	D.C.
A.M. in Govt. 1942, The George Washington University		Boswell, Claudia Smith	D.C.
Bonk, Esther Paul	Va.	Bordorf, Robert J.	Md.
Bonkowski, Harry Anthony	D.C.	Boteler, Basil	D.C.
Bonnet, Betty Lawson	D.C.	Boteler, Betty Louise	D.C.
B.S. 1952, Boston University		Boteler, Lois Eileen	D.C.
Bonnett, Joseph Lewis	D.C.	Boteler, Millard Eugene	
Bonnett, Lee Victor	Ill.	Bothwell, Lyman Dutton	
A.B. 1947, University of Minnesota		A.B. 1933, University of Arizona	Mass.
A.M. in Govt. 1942, The George Washington University		A.M. 1934, University of Michigan	Va.
Bonney, Jack	Va.	Botko, Mary Anna	Pa.
B.S. 1949, A.M. 1952, Pennsylvania State College		Botten, Donald Leroy	Calif.
Book, Eugene Myrna	D.C.	Bottenfield Richard Joe	
Book, Rose Marie	W.Va.	Bouch, David P.	
Booker, David Carlton	Va.	A.B. 1953, University of California at Los Angeles	Mass.
Boone, Arctas Cephas	Calif.	Boudreaux, Sharon Jeanne	Va.
A.B. 1940, Stanford University		Bouldin, Isabel Spotswood	D.C.
Boone, Marjorie Anne	D.C.	A.B. 1951, The George Washington University	D.C.
B.S. 1945, Northwestern University		Bouquet, Jean Louis	D.C.
A.M. 1951, The George Washington University		Boulard, Denis Cyrtenden	Va.
		Boulard, Stephen Phelps	
		Bouline, Barbara Kestian	
		B.S. 1948, Massachusetts State Teachers College	
		A.M. 1950, Syracuse University	

Students Registered

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Bourne, Hunter Carson, Jr. B.E. 1945, B.Lud.E. 1947, Virginia Polytechnic Institute	Va.	Boykin, Julius Whitney	Md.
Bourne, Robert Dudley A.B. 1950, University of Michigan	Va.	Boylan, Vincent DePaul A.B. 1947, Manhattan College	Va.
Bottum, Root, Nanda Panayota Bottum, Namy Margaret A.B. 1952, The George Washington University	D.C.	Boyle, Charles Dennis Boyle, John F. B.S. in C.E. 1940, New York University	Md. Va.
Boyer, Howard Ralph B.S. 1943, U.S. Merchant Marine Academy	Va.	Boyle, Peter F. B.S. 1945, U.S. Naval Academy	D.C.
B.S. in P.E. 1950, The George Washington University		Bracken, Catherine Colbert B.S. 1926, Immaculate College	D.C.
Boward, Lawrence Mark Bowen, John Franklin	D.C.	Bracken, Dwight Clovis A.B. 1924, The George Washington University	D.C.
Bowen, Leonard Ernest Bowen, Margaret	Va.	Brackney, Mary Eleanor	D.C.
Bower, Bruce Farra Bowerman, Arthur Wycott	D.C.	Bradlock, Harry Elton B.S. 1945, U.S. Naval Academy	Md.
Bowers, Thomas Kent B.S. 1942, U.S. Naval Academy	Va.	Bradfield, Lora Colvin	D.C.
Bowie, Donald Wayne Bowie, Frank McKay	Md.	Bradford, William A.B. 1939, The George Washington University	Md.
Bowie, Joan Esther Bowie, Mary Cecilia	Va.	Brall, Gordon Stephen	D.C.
Bowling, Charles Bernard, Jr. Bowling, James Walter	D.C.	Bradley, Robert Bell B.S. 1948, University of Maryland	Md.
Bowling, Mary Theresa Bowlby, Lawrence Vanahan	D.C.	Brady, Aubrey Loren B.S. in C.E. 1940, Texas Technological College	Ariz.
Bowman, Betty Lee B.S. in Ed. 1951, Madison College	W.Va.	Brady, Ellen Carolyn B.S. 1947, Wilson Teachers College	D.C.
Bowman, Frances Jefferson Bowman, James Homer	D.C.	Brace, William Pierce, Jr. Braden, Frederick Arnold	Md. D.C.
Bowman, Mary Ida Bowman, Raymond Edward	Calif.	Brady, Bert Bradford, Edwin Ellis	D.C. Calif.
Bowman, Russell William B.S. 1951, Johns Hopkins University	D.C.	Brady, Albert William, Jr. Braden, John Howard	D.C. Md.
A.M. 1952, The George Washington University	Va.	Bradenburg, Virginia Allen Bradenburger, Lucena	D.C. Va.
Bowen, Virginia Eleanor B.S. 1948, University of Illinois	Ill.	A.B. 1942, The George Washington University	D.C.
Bowen, Carl B.S. 1940, College of the City of New York	Md.	Bradley, Harry Marvin Braden, Gladys Darrell	Va. Mass.
M.S. 1952, The George Washington University		Braden, Margaret Ann Braden, Ronald Dean	D.C. Md.
Bowen, David Barry B.S. 1947, The George Washington University	Va.	Brady, Robert Paul B.S. 1944, M.B.A. New York University	
Bowen, George E. Dean B.S. 1947, University of Maryland	Md.	Braden, Arthur Livingston B.E. 1952, Georgia Institute of Technology	Ga.
Bowen, Henry C. Gable Bowen, Janet Halsten	Md.	Braden, Virginia Louise Braden, William Edward	Iowa D.C.
Bowl, Marvin Bowl, Milton Alexander	Md.	Braden, John Celestine B.S. 1941, Martha Washington College	Va.
B.S. 1950, State College of Washington	Va.	Braden, Philip Malcolm Braden, John Deane	Pa. Md.
Bowl, Raymond August B.S. 1941, U.S. Naval Academy	Iowa	Braden, Jerome Thomas A.B. 1940, The George Washington University	
M.S. in Eng. 1951, Princeton University		Bratton, Peter A. James A.B. 1942, Harvard University	Mass.
Bowl, Richard Bowl, Reuben Whittle	N.C.	Braun, Franklin Edward A.B. 1947, University of Denver	Fla.
B.S. 1947, Missouri State College B.S. 1949, University of Mississippi	Miss.	Braun, Frederick Herman B.M.E. 1945, University of Connecticut	Ohio
Bower, John Allen A.B. 1948, I.D. 1950, The George Washington University	Md.	Braun, Helen Jane Bray, Anne Pollock	D.C. Va.
B.S. 1947, Western Maryland College A.B. 1952, The George Washington University	Md.	B.S. 1928, College of Charleston B.S. in L.S. 1948, Simmons College, Mass.	
		Bray, Byron Edsel	D.C.

Breed, Rosilla M. H.	D.C.	Brittle, David Field, Jr.	D.C.
A.B. 1931, Vassar College		Britton, Keith George	Md.
Breedlove, William Harlan	Md.	A.B. 1952, The George Washington University	
A.B. 1952, Indiana University		Britton, Mary Martha	Mo.
Breeman, Marjelle Cecil	D.C.	Broad, Charles Stuart	Nebr.
Breeman, Stanley Irwin	D.C.	A.B. 1950, University of Minnesota	Ala.
Breim, Gary W.	Va.	Broad, Robert Louis, Jr.	
Breitskopf, Martin	N.Y.	B.S. in M.E. 1951, University of Alabama	Va.
B.S. 1951, Ohio State University		Broadus, John Prichard	
Brening, Amelia	N.D.	B.S. 1936, Wilson Teachers College	
Bremer, Frederick Godfrey	D.C.	A.M. 1945, Arizona State College	
B.S. 1948, University of Notre Dame		Flagstad	Va.
Bremer, Hans Otto	N.Y.	Broadus, John Thomas, Jr.	
A.B. 1949, Hofstra College		A.B. 1950, Lynchburg College	Md.
Brennan, John Joseph	D.C.	Broberg, John Bennett	Mo.
B.S. 1949, University of Scranton		Brockett, James Bernard	Md.
Brennan, Julie Anne	Mass.	Broda, John Joseph	R.I.
Brennan, Robert Barrett	D.C.	Broderick, George Vincent	Va.
Brennan, William Francis	D.C.	A.B. 1951, Brown University	N.J.
B.S. 1949, University of Scranton		Broderick, Michael David	Va.
A.M. 1951, The George Washington University		Brodsky, William	Nebr.
Brenner, Bernhard	D.C.	Broesamle, Jack Richard	
Brenner, Daniel Campbell	Fla.	Brogan, Francis Allen	Ga.
Brenner, Joseph Frank	N.J.	A.B. 1940, Carleton College	D.C.
A.B. 1954, Rutgers University		Wrogon, Ann Eliza	D.C.
Breslau, Rosemary Frances	Md.	Broman, Karin Elizabeth	
Bresler, Myrna Sally	Va.	Bromell, John Bowker	Md.
Brett, Sue McGlashan	Md.	B.S. 1952, Northwestern University	
A.B. 1924, A.M. 1936, University of North Carolina		Bromley, Aileen Wade	
Brewer, Charles Hamilton	Md.	B.S. 1924, A.M. 1952, George Peabody College for Teachers	D.C.
A.B. 1923, University of Maryland		Brone, Janice Reskin	Del.
Brewer, Marvin Turner	Va.	Broun, Samuel Herman	Md.
Brown, Norma Reid	Mich.	A.B. 1951, University of Delaware	
A.B. 1928, A.M. 1937, University of Michigan		Brookbank, John Spencer, Jr.	N.Y.
Brickner, Balfour A. J.	D.C.	B.S. 1951, University of Maryland	
A.B. 1948, University of Cincinnati		Brooks, Marvin LeRoy	D.C.
A.M. 1951, Hebrew Union College		B.S. 1941, Syracuse University	Va.
Brickson, William Emerson	Va.	Brooks, Melvin M.	Ohio
Bridgers, Leonard Thomas	D.C.	Brooks, Philip Henry	Calif.
B.S. 1948, Wake Forest College		Brooks, Roy Dale	
B.S. 1950, North Carolina State College		Brooks, Virginia Lou	
M.S. 1952, University of Maryland		A.B. 1951, University of California at Los Angeles	Md.
Bridges, Donald Reid	D.C.	Brooks, William Allen, Jr.	Md.
Bridgford, Alfred Roy	Md.	Brooks, William Bernard, Jr.	N.Y.
Brocke, Louis John	Va.	Brooks, William I.	Ors.
Brock, Raymond Charles, Jr.	Md.	B.S. 1951, Brooklyn College	
Brock, Shirley Ann	Md.	Brookshier, Robert Keith	Ark.
Brockman, Ronald Herbert		B.S. 1949, Oregon State College	
Brock, Mary Martin	D.C.	Broom, Mable Ruth	D.C.
Brock, Arthur Bernard	N.Y.	B.J. 1941, University of Missouri	
Brockhoff, Karen	D.C.	Brook, Mary Jane	D.C.
Brockman, Clement Seymour	Va.	Brostman, John Leo	Vt.
A.B. 1952, Indiana University		B.S. 1951, Xavier University	
Brod, William Murray	Md.	Brousseau, Reginald George	
A.B. 1958, Franklin and Marshall College		L.L.B. 1971, Northeastern University	
A.M. 1962, Columbia University		A.B. 1954, The George Washington University	Md.
Britt, Beverly Joy	D.C.	Brothers, Elizabeth Corinne	N.Y.
Britt, Marshall Henry	Tenn.	Brown, Susan	
B.S. 1941, Georgetown University		A.B. 1951, College of the City of New York	Md.
Britt, Olive Kenneth	Va.	Brown, Kenneth Allan	Mo.
B.S. 1941, Oregon State College		Brown, A. Marie	Va.
Britten, Emily Ruth	Mass.	Brown, Alice Marie	
Brown, Hubbs, Lillian Cratis	Pa.	B.E. 1947, Minnesota State Teachers College, Mankato	Va.
Brown, Edward Wesley	Md.	Brown, Ann Allen	Ohio
B.S. 1951, The George Washington University		A.B. 1953, Stanford University	
Brittingham, Irene Catherine	Mich.	Brown, Anne M.	
Brittle, Allan Cameron	Md.		

Brown, Ben Locke			
Brown, Charles Harmon	Va.	Brown, William Brigham III	D.C.
A.B. 1952, Lafayette College	Fla.	Brown, William Garrison	D.C.
Brown, Christopher Kingsley		Brown, William Lewis	D.C.
Brown, Christopher Wray	Va.	Brown, William McCormick	Md.
A.B. 1952, Marlboro College	Mass.	Brown, William Stuart	Iowa
Brown, Curtis Leslie		B.S. 1945, M.S. 1952, Iowa State College	
Brown, Dale Edward	D.C.		
B.S. 1942, Kansas State College	Oreg.	Brown, William Theodore	Va.
Brown, Dorothy		Browne, Alice Kay	D.C.
Brown, Duane Houghton	N.Y.	Browne, Milton Ronald	Md.
Brown, Duane Ann	Va.	Browne, Richard Allen	D.C.
Brown, Edward Livingston	Va.	Browne, Robert Thomas	Calif.
Brown, Elsie Ann	D.C.	B.S. 1952, University of California	
B.S. 1949, M.S. 1950, The George Washington University	Va.	Browner, Julius Harvey	N.Y.
Brown, Elizabeth Anne		A.B. 1952, Brooklyn College	
Brown, Elizabeth Little	D.C.	Browning, Elizabeth Koelsch	Md.
Brown, Elsie-Mae	Va.	Browning, Thomas Jefferson	D.C.
A.B. 1949, The George Washington University	D.C.	Brock, James William	Va.
Brown, Ernestine Bain		Brodaker, Franklin Charles	Md.
Brown, Frank David	Texas	Bruce-Briggs, Florence J.	D.C.
Brown, Frederick William	Ohio	Bruder, Bert Alan	N.J.
B.S. 1948, U.S. Naval Academy	N.Y.	A.B. 1952, Rutgers University	
Brown, G Stanley	Okla.	Brodier, Thelma Marcia	Va.
A.B. 1950, A.M. 1952, University of Oklahoma		Brodix, Albert Henry	D.C.
Brown, Garry Eldridge		Brown, Helen Corley	Pa.
A.B. 1951, Keanmazon College	Mich.	Browning, Annalese	D.C.
Brown, Glenn Meredith		Brunner, John Junior Howard	Va.
Brown, Henry Cloud	Md.	B.E.E. 1950, Catholic University of America	
Brown, Hugh Charles	D.C.	Brunner, Toby Godfrey Emanuel	D.C.
A.B. 1950, The Citadel	S.C.	A.B. 1950, Harvard University	
Brown, Jack Harry		Brons, Gloria A.	D.C.
A.B. 1954, A.M. 1952, Washington State College	Wash.	Brona, Henry Bernard	Md.
Brown, James Vernal		Brona, Nicholas Jr.	Md.
A.B. 1950, Morris Harvey College	W.Va.	B.S. 1947, University of Miami	
Brown, John Louisville		L.L.B. 1949, L.L.M. 1952, Georgetown University	
Brown, Julian Mitchell	Md.	Brunswick, Charles Edward	Va.
A.B. 1951, University of Georgia	S.C.	Brost, Nora May Tristepoe	D.C.
B.S. 1950, University of Alabama		Brown, Sally Ann	Va.
Brown, Lester Theodore	Md.	A.B. 1951, The George Washington University	
B.S. 1948, Pennsylvania State Teachers College, P. Sernalsburg	Pa.	Bryan, David Carvel	Md.
A.M. 1949, State College of Washington		Bryan, John William	Md.
Brown, Lee Beatrice		Bryant, Charles Reed	Mo.
B.C. in Ed. 1952, Kansas State Teachers College	D.C.	A.B. 1950, A.M. 1951, George Peabody College for Teachers	
Brown, Margaret Gould		Bryant, Joseph Franklin	Fla.
B.S. 1951, Longwood College	Va.	B.I. Ed. 1951, Georgia Institute of Technology	
Brown, Marvin Joel		Bryant, Ralph Lee	Mo.
Brown, Mary Anne	Ind.	B.S. 1951, University of Missouri	
Brown, Mary Elizabeth	Va.	Bryant, Robert Singleton	D.C.
Brown, Mary Margaret	Va.	Bryce, Charles Calhoun	Md.
Brown, Michael Edward	Md.	A.B. 1947, Ed.M. 1949, University of Pennsylvania	
Brown, Miles James	D.C.	Bryce, Richard Harry	N.Y.
A.B. 1949, Swarthmore College		B.C. E. 1949, Clarkson College	
Brown, Nina Lase	D.C.	Bulla, Dominick Anthony	N.J.
Brown, Orlan		Bushman, Jean Selmon	Conn.
B.S. 1950, Northwestern University	Va.	B.S. 1947, Russell Sage College	
A.M. 1951, The George Washington University	Va.	Bushman, Juliet Sophia	Pa.
Brown, Roland Lee		Bushman, William Edward	D.C.
L.L.B. 1949, University of Texas		B.S. 1950, A.M. 1951, Johns Hopkins University	
Brown, Ronald Lawton	Tex.	Buckholz, Edward Walter	D.C.
Brown, Ruth Kenna		Buchanan, Brodyse Klara	Md.
A.B. 1950, Southwestern University	Va.	Buchmann, Ulrich John	Md.
Brown, Thomas Albert III		Buck, Catherine McDermott	Va.
Brown, Vincent Charles	N.J.	Buck, Donald Alden	Va.
	Va.	Buckingham, John Daniel	D.C.
	Md.	Bucklew, Oscar Thomas	W.Va.

Buckley, Daniel John	D.C.	Burgess, Richard Osborne	Va
B.S. in Eng. 1953, The George Washington University		Burgoynes, Marian Seasons	D.C.
Buckley, James Joseph	N.H.	Burgoynes, Rodney William	Va
A.B. 1952, St. Anselm's College		Burhans, Cynthia Constance	Va
Buckley, Robert Baldwin	D.C.	B.S. 1952, University of Wisconsin	
B.S. in Eng. 1949, The George Washington University		Burington, Artha Jean	D.C.
Bucknell, Howard III	Va.	A.B. 1947, Oberlin College	D.C.
B.S. 1944, U.S. Naval Academy		Ed.M. 1950, University of Maryland	D.C.
Buckner, Henry	Ill.	Burk, Diana Elizabeth	Va
A.B. 1950, Eureka College		Burk, Mildred Chamandy	Va
A.M. 1951, University of Illinois		Burka, Leonard Walter	Va
Buckner, James Weldon	Tenn.	Burkart, Charles William Jr.	
A.B., LL.B. 1950, University of Tennessee		Burke, Alice Rebecca	
Budd, Joseph	Va.	A.B. 1921, LL.B. 1926, A.M. 1931, University of Virginia	Md
Budd, Philip Joseph	Va.	Burke, Calvin Roscoe	D.C.
Budde, Clifford Herbert	S.D.	Burke, Elizabeth Anne	Va
Buehler, Walter Paul	Pa.	Burke, Evelyn Founight	D.C.
B.S. 1950, Pennsylvania State College		B.S. in Ed. 1948, Madison College	Va
Buhrman, Lloyd William	Va.	Burke, Frances Veasey	Va
A.B. 1939, A.M. 1941, Washington University		Burke, Frances Kerr	Va
Bulinsky, Stella	Pa.	Burke, John Edward	
Bull, Elwyn Maurice	Va.	Burke, John Grant	
A.B. 1948, A.M. 1950, University of Virginia		A.B. 1950, The George Washington University	Va
Bull, Frate, Jr.	Md.	Burke, Patricia Michele	D.C.
A.B. 1946, The George Washington University		Burke, Robert Thomas	Va
Bullington, Edward Weeks	Md.	A.B. 1947, Princeton University	
B.S. 1947, Randolph-Macon College		Burka, Craighill Stoner	
M.S. 1948, Virginia Polytechnic Institute		B.S. 1941, Hampden-Sydney College	
Bullock, Joe Ragland	Miss.	A.M. 1952, The George Washington University	Va
A.B. 1947, University of Denver		Burke, Mary Joyce	Idaho
Bullock, Robert Graham	Va.	Burky, John Drummond	
A.B. 1952, Johns Hopkins University		B.S. in C.E. 1935, University of Colorado	Md.
Bullough, John Frank	Va.	Burman, John Richard	N.Y.
Bulman, John Dale	D.C.	Burnet, Arthur Russell	Fla.
B.S. 1950, The George Washington University		A.B. 1942, Oberlin College	Fla.
Bunnie, Kinshida Selma	D.C.	Burnett, Eleanor Ashbey	Va
Bunor, Joseph Stanley	Pa.	Burnett, Lloyd Calvin	
Bunten, Elizabeth	D.C.	Burnette, Loretta Jean	Ill.
A.B. 1950, The George Washington University		A.B. 1951, Mary Washington College	
Bunagaron, Hugo Vincent	D.C.	Burnette, Oliver Stokes	Md.
Buran, David John	D.C.	B.S. 1941, James Millikin University	
A.B. 1951, Carleton College		Burna, Carl Ray	
Burch, Bobby Frank	Tex.	A.B. 1948, Simpson College, Iowa	D.C.
B.S. in C.E. 1946, University of Kansas		A.M. 1949, University of Iowa	D.C.
Burch, Vivian Lemke	D.C.	Burns, Claire L.	
Burnard, Duncan Rags	D.C.	Burns, Edward Joseph, Jr.	
Burnham, Felicity Ada	D.C.	A.B. 1951, The George Washington University	Calif.
Burdett, Melvin	D.C.	Burns, Lafayette Ernest	
Burdette, Earl Leroy	Md.	B.S. 1951, University of California	Ohio
Burdick, Harry Franklin	Md.	Burns, Louella Catherine	D.C.
B.S. 1951, University of Maryland		Burns, Robert Emery	Va
Burdine, Alfred LITTLE	Va.	Burns, Rollin Lee	
Burkwood, Elizabeth Ann	Mass.	A.B. 1912, Wheaton College	Va.
B.S. in B.A. 1950, Boston University		A.M. 1915, Princeton University	Va.
Burke, Betty Lou	Mo.	Burns, Thomas Lawrence	
Burgess, Aubrey Lewis	D.C.	A.B. 1941, Canisius College	
R.M.E. 1948, The George Washington University		Burnside, Maurice Gwinn	
Burness, George Milan	D.C.	A.B. 1926, The Citadel	D.C.
Burness, James Earle	Va.	A.M. 1928, University of Texas	N.Y.
Burness, Johannes I.	Mass.	Ph.D. 1938, Duke University	D.C.
A.B. 1953, Stanford University		Burrell, Joan Ruth	
		Burrow, William Gordon	
		Bursley, George Herbert Patrick	Va
		B.S. 1946, U.S. Coast Guard Academy	
		Bursley, Gilbert Everette	
		A.B. 1934, University of Michigan	Miss.
		M.B.A. 1936, Harvard University	
		Burson, Edna Ruth	

Burtinick, Agnes Ines	D.C.	Byrnes, Michael Howard	D.C.
Burton, George, Jr.	D.C.	Ed.B. 1951, University of Miami	Va.
B.S. 1950, Virginia Polytechnic Institute		Byron, Alexander	D.C.
Burton, John Morton	D.C.	A.B. 1951, Duke University	
B.S. 1949, Northeastern University		Byron, Goodloe Edgar	D.C.
Burton, Robert Lee	Md.	A.B. 1951, University of Virginia	
Burton, Sarah Justine	D.C.		
Burwell, M. Inez	D.C.	C	
Burwell, Ann Hutton	Va.	Cabelus, Thomas Joseph, Jr.	Conn.
A.B. 1952, The George Washington University		A.B. 1953, Syracuse University	
Bush, James Ralph, Jr.	Va.	Cable, Charles Meredith	Mo.
Buser, Charles Aubrey	Md.	A.B. 1942, Southwestern University	Va.
A.B. 1949, Goshen College		Cable, Donald Aubrey	D.C.
Buser, Elizabeth Anne	D.C.	A.B. 1949, Lake Forest College	D.C.
A.B. 1948, The George Washington University		Cabrera, John Emile	D.C.
Bush, Don Porter	S.D.	Cacovator, Guy Tommy	D.C.
B.S. in E.E. 1952, South Dakota School of Mines and Technology		Cade, Neil Lewis	D.C.
Bush, Eleanor Louise	D.C.	Cadwallader, Gouverneur	Pa.
Bush, George	N.Y.	B.S. 1951, Haverford College	
A.B. 1949, Ph.D. 1954, New York University		Callery, James Anthony	Pa.
B.S. 1950, Columbia University		Callery, Mary Margaret	N.C.
Bosch, James Alfred	N.C.	B.S. 1950, Indiana State Teachers College	
Bosch, Margaret Graham	Ohio	Callisch, Frank Albert, Jr.	Wis.
Boss, Louis Frank	Md.	A.B. in Ed. 1950, The George Washington University	
Boss, Dale Herman	Md.	Cahill, James Pennington	D.C.
B.S. in Ed. 1952, Pennsylvania State Teachers College, Kutztown		Calhoun, Lynda Lee	Calif.
Bott, Valeda, Cesar	D.C.	Cain, Betty Ann	
Boucher, Aita	D.C.	A.B. 1951, Stanford University	
Boucher, Cecil Orin	Md.	Cain, John Henry	Miss.
Boutard, Gloria	D.C.	B.S.E. 1951, C.E. 1952, University of Mississippi	
Boutler, Bruce, Jr.	Md.	Cain, John Wallace	Md.
B.S. 1951, Franklin and Marshall College		Cain, William Morris	Ind.
Butler, Dan Logan	D.C.	Caggas, Paul Anthony	D.C.
Butler, Doris Grace	D.C.	Caldwell, John Bogle	W.Va.
Butler, John Kenneth	Tenn.	Calhoun, James Robert	Ind.
Butler, Louis Dampier	Va.	B.S. 1948, University of California	
Butler, Lovena May	Pa.	Calhoun, Margaret D.	Va.
Butler, Margaret Newman	Colo.	A.B. 1927, Birmingham-Southern College	
A.B. 1942, A.M. 1948, University of Denver		A.M. 1933, George Peabody College for Teachers	
Butler, Richard Frank	D.C.	Calhoun, William Harper	W.Va.
Butry, Charles	Ohio	Callahan, Elizabeth Dixon	D.C.
B.S. 1950, Western Reserve University		Call, Richard Grant	Idaho
Butt, Frederick David	D.C.	Callaghan, Frances Goddard	D.C.
Butterfield, Franklin Herman	Utah	Callaghan, Richard Lawrence	Mont.
A.B. 1949, University of Utah		B.S. 1951, Georgetown University	
Butterfield, James Reid	Md.	Callahan, William Lawrence	Md.
Butterfield, Ruth Catherine	Mass.	Callahan, Eugene Regis	Md.
Bayston, Stella Mary	Va.	Callahan, Howard Curtis	D.C.
A.B. 1945, Western Reserve University		Callahan, James Joseph	D.C.
Bye, Seymour	Conn.	Callahan, John Francis	Mass.
B.S. 1951, M.S. 1952, The George Washington University		B.S. 1942, U.S. Naval Academy	
Byrd, David Stevens	Md.	B.C.E. 1947, M.C.E. 1948, Rensselaer Polytechnic Institute	
A.B. 1953, University of Virginia		Callahan, John Joseph	Mass.
Byrd, Lonnie Guy, Jr.	Tenn.	B.S. 1948, College of the Holy Cross	
L.L.B. 1952, University of Missouri		H.B. 1951, Boston College	Pa.
Byrne, Robert Carlyle	W.Va.	Callahan, John Joseph	Minn.
Byrne, Francis Malcolm	S.D.	Callender, Donald Bruce	D.C.
Byrne, John Andrew	Mass.	Callaway, Kenneth Miller	Va.
Byrne, Robert Joseph	Md.	Calle, Martin Eric, Jr.	
D.V.M. 1944, Cornell University		B.S. 1951, Indiana University	D.C.
		Calloway, Catherine Jean	D.C.
		Callow, John Henry	Va.
		Calvert, Francis Nelson	D.C.
		A.B. 1951, Howard College	
		Calvert, Joan Patricia	D.C.

Camara, Helen Loretta A.B. 1941, Wheaton College	Md.	Cappello, Joseph Paul B.S. in F.S. 1950, Georgetown University	D.C. Va. N.Y. Calif.
Camarot, Henry Jules L.I.B. 1951, The George Washington University	Alaska	Capps, Anna Joyce Capriglione Louis	D.C.
Cambusos, Nicholas Michael B.S. 1953, The George Washington University	D.C.	Caprio, Robert Andrew Caprow, Richard Wilson B.S. 1933, University of Kansas	D.C.
Cambre, Della Norene Cancello, Joseph Albert Cameron, Archie Elmos B.S. 1941, Ferris Institute	Ill. D.C. Md.	Caracciolo, Francis Samuel A.B. 1952, The George Washington University	D.C. D.C. Wash.
Cameron, Betty Claire B.S. 1952, University of Utah	Utah	Carbonell, Maria Lourdes Cardv, George James Carey, William Raymond A.B. 1941, Washington State College	Conn. N.Y.
Cameron, Daniel Edwin Cameron, Janet Cameron, Stuart Middleton	D.C. Md. Md.	Carlia, Thomas Anthony Carlan, Alan Jay A.B. 1951, Brooklyn College	N.Y.
Camp, Ronald Camp, Warner Hill B.S. 1952, University of Alabama	D.C. Ala.	Carlan, Audrey Michaels A.B. 1951, Brooklyn College	Calif. Va.
Campagna, Ignatius Edward Campararo, Joseph John, Jr. Campbell, Alexander Spotswood	Va. D.C. D.C.	Carle, Helen Tusler Carley, James Vincent B.S. 1941, University of Virginia	Va.
Campbell, Charles Edwin Campbell, Charles Richard Campbell, Claire Christine Campbell, Donald Allen B.S. 1951, Rensselaer Polytechnic Institute	Ky. Fla. D.C. Idaho Pa.	Carl, Chester Robert B.S. in B.A. 1938, Boston University Carlin, John Francis Carlisle, Janet Luthringer Carlisle, Russell Edwin A.B. 1953, University of Michigan	Pa. Va. Fla. Pa.
Campbell, Harry Lee B.S. Eng. 1917, Michigan State College	Va.	Carlson, Francis Brandon B.S. 1947, U.S. Naval Academy Carlson, Donald Ward B.S. in Eng. 1952, Illinois Institute of Technology	Neb. Md.
Campbell, Ian Philip Campbell, James Forrest B.S. 1948, Pennsylvania State Teachers College, Lock Haven	D.C. Va.	Carlson, Dorothy Sandison B.S. 1936, Northwest Missouri State Teachers College	Calif. D.C. Ore.
Campbell, Jane Buckard Campbell, Jack Peyton Russell Campbell, John Eames Campbell, John Sidney Campbell, Josephine Ann A.B. 1949, Miami University	Va. D.C. Md. Mich. Ind.	Carlson, Edith Isabel Carlson, Frederick Freeman Carlson, Harold Gustav B.S. 1940, U.S. Naval Academy Carlson, Herbert Donald Carlson, Martin Emilius Carlson, Maryjo Suverkrup A.B. 1948, The George Washington University	Md. Va. Neb.
Campbell, Patricia Campbell, Robert Alexander, Jr. Campbell, Robert Bruce Campbell, William Leslie Carnes, Edward Poland B.S. 1954, University of Maryland	N.Y. D.C. R.I. Mo. Md.	Carlson, Paul Earle A.B. 1951, Stanford University Carlson, Theodora Elizabeth A.B. 1930, Nebraska State Teachers College	Kent. Va.
Camus, Shirley Ann Canada, Thomas Clinton Candy, Donald William B.S. in Met. Eng. 1951, University of Missouri	Md. Va. Ill.	Carlton, Harry Nelson B.S. 1949, M.S. 1950, The George Washington University	D.C. Del.
Candy, William James B.S. 1940, Fordham University M.S. 1949, The George Washington University	N.Y.	Carlucci, Thomas Ralph Carlin, Charles Carmas, Estelle Gaither Carnahan, Melvin Eugene Carnahan, Robert Boyd Carnell, John Evans B.S. 1953, Pennsylvania State College	Va. Mo. Va. Pa. N.H. Conn.
Canafek, Everett Daniel Canfield, John Vincent Cantelano, Janet Adrienne A.B. 1954, Western Reserve University	Ky. D.C. Md.	Carnes, Francis Leslie, Jr. Carnes, William Harold A.B. 1950, University of Connecticut Carnivale, Caroline Caron, Anna Mae Carosella, Rosemary Janet Carpenter, Anne Caro A.B. 1946, Vassar College Carpenter, Caleb Fred A.B. in Ed. 1948, A.M. in Ed. 1949, The George Washington University	N.Y. Ohio Md. Pa. D.C.
Cannon, John Andrew Carter, Florence Marion Carter, Jerome Wolf Carrick, Lee Randle Carpell, Dolores Mildred Carp, A. Elmer Mary Carpentier, Carlo B. Carpone, Aristide Caporaso, Andrew B.S. 1951, St. Louis University	N.Y. Va. N.Y. Miss. Md. Pa. D.C. N.Y. N.J.		

Carpenter, Clifton A.B. 1948, University of Kentucky	Ky.	Carter, Frederic Lee A.B. 1951, Catholic University of America	N.Y.
Carpenter, Edwin John, Jr. A.B. 1952, The George Washington University	D.C.	Carter, Myrtle Helen	Va.
Carpenter, Jean Anne B.S. 1945, University of Virginia	D.C.	Carter, Robert Dennis	Md.
Carpenter, Frank John B.S. 1951, Wisconsin State Teachers College, Oshkosh	Va.	Carter, Thelma May	Va.
Carr, Foster C. A.B. 1941, San Diego State College	Md.	Carter, Thomas Nelson B.S. 1951, American University	D.C.
Carr, Kenneth Moore B.S. 1952, Randolph-Macon College	Va.	Carter, George Louis	Md.
Carr, Lawrence Barrows A.B. 1951, Stanford University	Va.	Carter, Jeanne Audrey	N.Y.
Carr, Lawrence Edward, Jr. B.S. 1948, L.L.B. 1949, College of Notre Dame of Maryland	Calif.	Casuso, Veronica Theresa	D.C.
Carr, William Edwirth B.S. 1941, Folsom University	Md.	Carvallas, Jennie	Md.
Carr, Richard M. B.S. 1953, Ph.D. 1957, University of Wisconsin	Md.	Casimirova, Arturo Ynocencia III	Venezuela
Carr, William A.M. 1950, Princeton University	Md.	Casas, Antonio	Va.
Carr, Daniel Jordan B.S. 1949, U.S. Naval Academy	Md.	Casavant, Raymond Andrew	Md.
Carr, Bess Beva A.B. 1942, Brooklyn College	Va.	Cass, Fred Robert	Oreg.
Carr, Don Hereford A.B. 1942, Brooklyn College	Calif.	Cass, Ann Dunneley	D.C.
Carr, John Edward, Jr. A.B. 1947, Providence College	Ala.	Cass, Catherine Elizabeth	Conn.
Carr, John Hugh A.M. 1953, Georgetown University	D.C.	Cass, Edward James B.S. 1950, St. Michael's College	N.Y.
Carr, Mary Josephine A.B. 1944, Cornell University	D.C.	Cass, Irving John A.B. 1946, Brown University	Va.
Carr, Mary Josephine A.B. 1949, Harvard University	D.C.	Cass, John R.	Pa.
Carr, Mary Josephine A.B. 1951, Maryville College, Tenn.	Mass.	Cass, Robert Patrick A.B. 1951, College of the Holy Cross	Md.
Carr, Mary Josephine A.B. 1951, The George Washington University	Va.	Cash, Charles Owen	Va.
Carr, New Louis, Jr. B.S. 1948, Geneva College	Tenn.	Cason, James Henry	D.C.
Carr, Nicholas Vincent B.S. 1948, Geneva College	D.C.	Caspi, Margaret Ann	D.C.
Carr, Otis Theodore A.B. 1948, Geneva College	Pa.	Casper, Mauris Herbert	N.Y.
Carr, Patricia Lee A.B. 1948, Geneva College	D.C.	Cass, Nathan B.E.E. 1952, New York University	Calif.
Carr, Helen Dolores A.B. 1948, Geneva College	Ala.	Cassella, Salvatore Francis	D.C.
Carr, Donna Jane A.B. 1948, Geneva College	D.C.	Cassidy, Claire Isabel	D.C.
Carr, Mary H. B. A.B. 1948, Geneva College	D.C.	Cassidy, David Lawrence	D.C.
Carr, Mary Weller A.B. 1948, Geneva College	Mass.	Cassidy, Lewis Cochran IV	Utah
Carr, John Roy B.S. 1952, The George Washington University	Mich.	Cassidy, Donn Edwint A.B. 1950, The George Washington University	D.C.
Carr, Darrell Houshield A.B. 1948, The George Washington University	Va.	Castillo, Jose Maria A.B. in Govt. 1948, The George Washington University	Va.
Carr, Edward Nelson A.B. 1948, The George Washington University	Wis.	Castleman, Jacob Israel B.S. 1946, Massachusetts Institute of Technology	Mo.
Carr, Elizabeth Casey A.B. 1948, The George Washington University	D.C.	Castner, Rachel Margaret B.S. 1944, Central Missouri State Teachers College	Md.
Carr, Fred Robinson B.S. 1949, Madison College, Tenn.	Ill.	Castro, Peter Emmanuel	D.C.
	Va.	Castro, Felicia May	Va.
	Va.	Caswell, Adele Lambert	Va.
	Va.	Caswell, Carol Patricia	Va.
	Va.	Caswell, John Lewis B.S. 1950, U.S. Merchant Marine Academy	Pa.
	Va.	Cathart, William Thomas A.B. 1942, Middlebury College	N.Y.
	Va.	Catone, Edward Alexander	N.Y.
	Va.	Carl, Ronald Thomas	Va.
	Va.	Carle, Christopher	Texas
	Va.	Carroll, Lawrence Myers	Va.
	Va.	Carroll, Donald Edmudge	D.C.
	Va.	Carroll, James Alan	D.C.
	Va.	Carroll, Anita	Va.
	Va.	Cavaretto, Victor John	N.Y.
	Va.	Cavalieri, Vilma Antonette A.B. 1938, The George Washington University	Md.
	Va.	Cavanagh, Ruth Nelson	Pa.
	Va.	Cavanaugh, John Paul	D.C.
	Va.	Caywood, Helen Marie A.B. 1946, Emory and Henry College	D.C.

Cebollero, Manuel	D.C.	Charles, Cecil Marvin	D.C.
Ceilla, Roland Peter	Md.	Charlesworth, George Herbert	Md.
Ceres, Frederick, Jr.	N.H.	A.B. 1938, Houghton College	
Cerick, Peter Aull	D.C.	A.M. 1947, University of California	N.Y.
Cermak, Lois Ann	D.C.	at Los Angeles	
Ceruz, Rosa	D.C.	Charlick, Carl	
Cerovski, Ann R.	Nebr.	A.B. 1953, The George Washington	
Ceschin, August John	Pa.	University	D.C.
Chammas, Frances	D.C.	Charlton, John George	
Chadbourne, John Warren	D.C.	L.L.B. 1948, University of Baltimore	Va.
Chadwell, Powell Clayton	D.C.	Charlwood, Reginald Edward	D.C.
Chaffin, Susan Pendleton	Va.	Chase, Adeline Clio	Pa.
Chakeres, Pauline	D.C.	Chase, Katherine Safford	
A.B. 1947, The George Washington		A.B. 1950, Radcliffe College	
University		A.M. 1952, University of Virginia	D.C.
Chalmers, David Mark	D.C.	Chase, Leah	Calif.
A.B. 1949, Swarthmore College		Chase, Morton Allen	
Chamas, Justo Garzon	D.C.	A.B. 1953, Whittier College	Md.
Chamberlain, Margaret Mary	D.C.	Chase, Robert Orrin	Va.
Chamberlain, Mary Ann	N.C.	Chasnov, Edith Kleinberg	
Chamberlain, Nelson Horatio	Md.	B.S. 1945, New York University	Va.
Chamberlin, Guy Wadsworth, Jr.	D.C.	Chason, Anne Brill	D.C.
B.S. 1950, Washington and Lee		Chassan, Jacob B.	
University		B.S. 1940, College of the City of	
Chamberlin, Louise Ingalls	Ill.	New York	
A.B. 1946, Bryn Mawr College		A.M. 1949, The George Washington	
A.M. 1950, University of Chicago		University	D.C.
Chamberlin, Terrell Roger	Va.	Chatlin, Gerald Morris	W.Va.
Chambers, Doris Ross	D.C.	Chatrnuck, Mary Lee	N.Y.
B.S. 1950, Wilson Teachers College		Chatrnuck, Stephen	D.C.
Chambers, Francis William, Jr.	Ga.	Chaubourmer, Roger Amedee	D.C.
B.E.E. 1934, Georgia Institute of		Ph.D. 1952, University of Paris	Tenn.
Technology		Chavez, Jose Arcadio	
Chamblee, Suzanne Fredrika	Md.	Cheatham, Charles Phillips	D.C.
Chambliss, John Coventry	Va.	A.B. 1952, University of Tennessee	Va.
Champion, Marvin Ashbury	Ala.	Chechyk, Grace Ethel	Colombia
B.S. 1944, Alabama Polytechnic		Check, Lov Annis	Pa.
Institute		Chegwin, Atalia	D.C.
Chan, Dorothy May	D.C.	Chelena, John Edward	
Chan, Tione Tony	D.C.	Chen, William T.	Iowa
Chanse, Anthony Nicholas	Md.	A.B. 1951, Manchester College	
Chandler, Herbert George	Md.	Cheney, Harlan L.	D.C.
Chandler, Joseph Merritt, Jr.	D.C.	A.B. 1941, Yankton College	
Chandler, Ralph Clark	Va.	Cheng, Hang Sheng	
Chance, James William	D.C.	A.B. 1948, University of China	
A.B. 1949, Catholic University of		A.M. 1951, The George Washington	Va.
America		University	
M.S. 1950, The George Washington		Chernuchin, Paul	
University		A.B. 1947, University of Michigan	
Chasey, Winimal Womack	D.C.	A.M. 1952, The George Washington	Va.
Chase, Moss Esh	Va.	University	
Chase, Pau-Mou Tan	Md.	Cherry, John Clayton	
A.B. 1950, The George Washington		B.S. 1951, The George Washington	N.Y.
University		University	Pa.
Chasens, Kenneth Frank, Jr.	D.C.	Chertall, Mitchell	Md.
Chasen, Mary Geringer	D.C.	Chervenak, William Alexious	D.C.
B.S. 1948, Simmons College		Chesham, William Mohr	D.C.
Chapman, Allen Dean	Va.	Chesley, Edward Joseph	N.Y.
Chapman, Viva Corrine	D.C.	Chesney, Daniel R.	Ala.
Chapman, John Leonard	D.C.	Chesney, William Bortis, Jr.	D.C.
Chapman, John Timothy	Wash.	Chemer, Beatie Hicks	Fla.
Chapman, Kathleen Drowsey	Md.	Chestnutt, Warren Lynwood	D.C.
A.B. in Ed. 1941, The George		Chevron, George Emmet	
Washington University		Chi, Michael C. J.	
Chapman, Robert Byron	Texas	B.S. 1946, University of Tientsin	Ariz.
Chapman, William Harold	N.C.	M.S. 1949, Louisiana State University	Calif.
B.S. 1941, Davidson College		Chion, Antone M., Jr.	
Chappell, Richard Arnold	D.C.	Chen, Tuan Fong	Fla.
A.B. 1926, Mexico University		L.L.B. 1947, Catholic University of	Va.
Chappelow, George Herbert	D.C.	America	Md.
Chappelow, Nancy	D.C.	Child, Daniel Keigwin	
B.S. 1951, Madison College		Child, William Otis	
Chapper, Frank Morris	Mass.	Childress, Elmer Thomas	

Students Registered

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Childress, Larry Brownlow	D.C.	Clancy, Philip Christopher	N.Y.
Chilton, Arthur Broadus	D.C.	Clapp, Peggy Ann	Md.
Chlor, Monroe Ira	N.Y.	Clapp, Thomas H. Jr.	Md.
Chen, Edmund	D.C.	Clarke, James Francis	D.C.
Chen, Ruby	Calif.	Clark, Alice	D.C.
Chen, Paul Wayne	Pa.	Clark, Asa Alan	Calif.
Chen, Sang Roon	D.C.	B.S. 1941, U. S. Naval Academy	
A.B. 1951, Monmouth College		Clark, Benjamin Nathan	Va.
Chopra, Lalit Kumar	D.C.	Clark, Beverly Joan	Ohio
Chotiner, Allan Isadore	Md.	Clark, Charles Henry	Iowa
A.B. 1947, Pennsylvania State College		Clark, Clifford Dale	Va.
Ed M. 1941, University of Pittsburgh		A.B. 1948, University of Kansas	
Chow, Philip Lin	D.C.	A.M. 1950, University of Chicago	
Chramiec, Mark Andrew	Va.	Clark, Doris Ralph	D.C.
Chrengber, Janice Anell	D.C.	Clark, Dorothy Jean	D.C.
A.B. 1947, Western Maryland College		A.B. 1951, Bucknell University	
Christensen, Ellen Elizabeth	D.C.	Clark, George Odway	Va.
Christensen, Iylie	Va.	Clark, Gilbert Reed	Md.
Christensen, James Richard	Mich.	B.S. 1951, University of Maryland	
B.S.E. 1950, L.L.B. 1951, University of Michigan		Clark, James Daniel	Va.
Christensen, Jane Barrie		Clark, James Scholl	Md.
Christensen, Jennifer Jean	Mich.	Clark, John Ray	N.C.
B.S. 1950, University of Illinois	Va.	Clark, Julia Lorraine	D.C.
Christensen, Robert		Clark, Lowell Dean	Minn.
B.S. 1950, University of Illinois	Ill.	Clark, Marilyn June	Md.
Christensen, Dolly Aileen		Clark, Richard H.	N.Y.
Chase, Alex Kuoz	D.C.	Clark, Richard Martin	Ohio
B.S. 1950, New York University	D.C.	B.S. 1944, Kent State University	
Chase, Peter		Clark, Robert Elliot	Del.
Chastman, Margaret Collins	Mass.	A.B. 1950, Dickinson College	
A.B. 1951, Smith College	D.C.	Clark, Robert Lee	Md.
Chavon, Alexander George		Clark, Roland Ellis	Md.
Cherry, Lowell Francis	D.C.	Clark, Thaddeus Stevens	D.C.
B.S. 1950, Georgetown University	Ind.	Clark, Victoria Chappel	D.C.
Chewski, Joseph		B.S. in Ed. 1952, Columbia University	
Chick, Adeline Celia	D.C.	Clark, Virginia Prescott	Md.
Chen, Chue Ung	Va.	Clark, Walter Cross, Jr.	Md.
Chen, George Masami	D.C.	Clark, William Ross	Va.
A.B. 1952, Washington University	Hawai	Clarke, Addison	Va.
Chen, Charlotte Y. Jan		B.S. 1951, The George Washington University	
Chen, Josephine Y. Hsiao	D.C.	Clarke, Lewis Lann	Va.
Chen, David Lawrence	D.C.	Clarke, Louise Avril	Md.
A.B. 1942, West Virginia University	Md.	Clarke, Ray Clayton Jr.	Md.
D.D.S. 1944, University of Maryland		A.B. 1949, Cornell University	
M.S. 1947, The George Washington University		Clarkson, Douglas Marvin	Md.
Chen, Mary Louise	D.C.	B.F.F. 1952, Cornell University	
Chen, Ed. Louis	D.C.	Clary, Matthew Adam, Jr.	Texas
A.B. 1951, University of Maryland		B.S. 1951, University of Maryland	
Chen, Curtis A.	Pa.	Chassen, Peter	Va.
B.S. 1952, Virginia College		Clay, Forrest Pierce, Jr.	Va.
Chen, Vincent Alexander	N.J.	B.S. 1952, Randolph-Macon College	
B.S. 1952, The George Washington University		M.S. 1950, Ph.D. 1952, University of Virginia	
Chen, William Stockton	Md.	Clay, Franklin Edward	Texas
Chen, Leonard Francis	N.I.	B.A. 1949, 1949, Rensselaer Polytechnic Institute	
Chen, Albert	Pa.	Clay, James Powell, Jr.	D.C.
A.B. 1952, Washington and Jefferson College		A.B. 1951, Bowdoin College	
Chen, Ronald Charles	N.J.	Clay, William H. Jones	Md.
Chen, Frank Joseph	Va.	B.S. 1951, Wake Forest College	
B.S. 1950, Syracuse University		Clayborne, John Delano	Va.
Chen, John John		Clear, Joyce Marie	Va.
Chen, Basil I.	Va.	Clear, Thomas John, Jr.	Va.
Chen, Frances Lathrop	Mass.	Clear, Frederick William	R.I.
B.S. 1950, A.M. 1952, The George Washington University	D.C.	B.S. 1949, M.S. 1950, Virginia Polytechnic Institute	
Chen, Nan W.		Clear, William Frank	D.C.
Chen, Harold Glenn	Va.	Cleek, Given Wood	Va.
	Md.	Clements, Elizabeth Hughes	D.C.
	Mo.	Clements, Morrison McKenney	N.Y.

Clements, Neal Woodson B.S. 1949, U. S. Naval Academy B.C.E. 1951, Rensselaer Polytechnic Institute	Texas	Coffelt, Mary Elizabeth Coffey, Betty Maxine B.S. 1948, University of Maryland	D.C. D.C. Va
Clemont, Hazel L. Clemens, Helen Kinney B.S. 1942, Pennsylvania State Teachers College, Lock Haven	D.C. D.C.	Coffin, Edward Warren B.S. 1950, University of Maryland	Minn Va
Clendinning, William Roy A.B. 1952, North Texas Agricultural College	Va.	Coffin, James Clyde Coffman, Edgar Donald Coffman, Richard Homer	Cali Va D.C.
Cleveland, French Mayes, Jr. A.B. 1954, Emory and Henry College	Va.	Cogan, Sherwin Cogan, George Winifred Coggshall, Myrtle Edith	Ill N.Y.
Cleaton, Zeta Loughorne Cleburn, Donald Marshall A.B. 1949, American University	Va Md.	Coglian, Joseph Albert B.S. 1951, Polytechnic Institute of Brooklyn	Va D.C.
Cleburn, Marvin Butler A.B. in Govt. 1950, The George Washington University	Tenn.	Cogswell, William Neitzey Cohan, Alan Barry Cohen, Alan	D.C. Md D.C.
Cleburn, Elizabeth Elmer Cleburn, Ernest Ridley Cleburn, Harley Ronald LL.B. 1940, American University A.B. in Govt. 1940, The George Washington University	D.C. D.C. Ill	Cohen, Ann Ellen Cohen, Arthur Steven Cohen, Barbara Dorothy Cohen, David Cohen, Donald Stewart Cohen, Faye Barbara Cohen, Gerald	D.C. Md D.C. D.C. D.C. D.C.
Cline, Barbara Holden Clingenpeel, Calvin Hoff Clipp, Louis Leighton Clisbey, Mitchell Chase Clifton, Willard Caradine, Jr. Cloutier, Rita Gertrude A.B. in Govt. 1951, The George Washington University	Mass Va D.C. Md D.C. D.C.	Cohen, Harold Konrad Cohen, Joel Harvey Cohen, Judith Roberta Cohen, Martin Irwin Cohen, Melvin B.C.E. 1948, Virginia Polytechnic Institute	N.Y. D.C. D.C. D.C.
Cloff, Judith Stevens Cockles, Elizabeth Ann Cockles, John Joseph Cobb, Carl Melvin Cobb, Charles David A.B. 1939, A.M. 1946, East Carolina State Teachers College	Ohio Ind N.J. D.C. N.C.	Cohen, Myrick Richard Cohen, Norman Cohen, Stanley Cohen, William Blanchard Coker, George Meadows, Jr. Coker, Robert Harry Cokcorio, James Michael Cokor, Daniel Albert, Jr. A.B. 1950, Shepherd College	Md D.C. Md Md Va Va Md D.C.
Cobb, William Edward Cobert, George William Cochelour, Richard Donald Cochran, Clyde Brady A.B. 1948, B.S. in Ed. 1959, A.M. 1960, Ohio State University	D.C. Va Va D.C.	Colborn, Robert Chester Colborn, Paul Appleby A.B. in Govt. 1952, The George Washington University	Md
Cochran, Fred Edward B.S. in B.A. 1941, Ohio State University LL.B. 1946, St. Johns University, N.Y.	Md.	Colby, Vera L. B.S. 1941, Oregon State College	D.C. Va
Cochran, Grace Alice B.S. in H.E. 1951, The George Washington University	Va	Cole, Alma Odell Cole, Andrew Truman Cole, Arnold Harvey B.S. 1949, College of the City of New York	N.Y. Va Va
Cochran, Joe Bruce B.S. 1926, U. S. Naval Academy Cochran, Virginia Lewis A.B. 1959, Berean College A.M. 1963, West Virginia University	Va D.C.	Cole, Donald William A.B. 1950, University of Illinois Cole, Edna Joan A.B. 1952, Brooklyn College	N.Y. Va D.C.
Cochran, Edward Francis Cochran, Mildred Elizabeth Steed B.S. 1931, Longwood College Cock, Thomas Charles A.B. 1952, The George Washington University	Mass Va Cali.	Cole, Gory Vance Cole, John Pope, Jr. B.S. 1951, Alabama Polytechnic Institute	Va
Coker, Ella Marlene Cokora, Johnny Adonis Cody, Charles Allen Coe, June C. Coe, Leonard Dayton Coe, Jess Campbell Coffey, Clifford Glenn B.S. 1951, University of Florida	D.C. Md Va N.C. N.Y. D.C. Fla.	Cole, Lillian Grace B.S. 1948, University of Maryland Cole, Martin, Leonard Cole, Milton Burns A.B. 1952, The George Washington University Cole, Sally Ann Coleman, Florence Muir Coleman, Horace Wilde III A.B. 1952, University of the South Coleman, John Francis Coleman, Marjorie Helen Coleman, Millicent	Va Md Mich S.C. Va D.C. Fla D.C.

Colenda, Frank B.C.E. 1942, North Carolina State College	N.C.	Conant, Robert Charlton A.B. 1952, The George Washington University	Va.
Colevet, Prokopes A.B. 1950, The George Washington University	D.C.	Connelia, Katherine Broderick Connee, Joan Marshall Cone, Joanne Claire Conklin, Earl Biddle, Jr. A.B. 1951, Ohio Wesleyan University	R.I. D.C. N.J. Md. D.C.
Collat, Raymond Eugene A.B. 1950, University of California	Va.	Conley, Mary Katherine Conlon, Arthur James Conn, Richard Edwin Connell, Eugene Ambrose, Jr. A.B. 1951, The George Washington University	Va. N.Y. Md. Md.
Coner, Benjamin Gilbert B.S. 1948, Union College and University	D.C.	Connelly, Edward Ray Conner, James Edwood B.S. 1949, Richmond Professional Institute Ed.M. 1951, University of Virginia	D.C. Md.
Colley, Thomas E. A.B. 1953, American University	Va.	Conner, Margaret Walter B.F.A. 1949, Richmond Professional Institute	Md.
Collier, Jack Wayne Collier, Niama Jean Colliers, Mary Louise A.B. 1955, Wesleyan College A.M. 1956, Northwestern University	Va. S.D. Va.	Connors, Robert Joseph B.S. 1949, University of Scranton L.L.B. 1952, The George Washington University	Pa.
Collins, Frederick Nickol Collins, John Albert A.B. 1952, St. John's College	D.C. N.Y.	Conrad, John Henry Conrad, Mary Ellen Conrad, Victor Ray Conroy, James Joseph A.B. 1953, The George Washington University	Va. D.C. Mass. Va. D.C.
Collins, John Duren III A.B. 1944, Wake Forest College	N.C.	Conroy, Richard Leo Contraud, John Albert B.S. 1947, Massachusetts Institute of Technology	D.C. N.Y.
Collins, John Joseph A.B. 1949, University of Missouri Collins, John LeRoy A.B. 1950, University of Georgia	Mass.	Cont, Frederic Louis B.S. 1951, Drexel Institute of Technology	Pa.
Collins, Josephine Hardman A.B. 1952, Shorter College	Mich.	Conti, John William A.B. 1951, Bowdoin College	Pa.
Collins, Kenneth Claude A.B. 1952, University of Denver	D.C.	Contraud, Frank Edward Conway, Bryant Wayland A.B. 1952, Louisiana State University	Va. Va. Va.
Collins, Patrick John B.S. 1952, University of Maryland	Colo.	Conway, James Arthur Conway, James Norman Conway, John Thomas A.B. 1943, University of Minnesota Conway, Margaret Mary A.B. 1944, Maryland College L.L.B. 1948, Catholic University of America	N.Y. Mass. Va. Va. D.C.
Collins, Robert Rufus, Jr. Collins, Virginia May Collins, Wallace Eddy Collins, William Joseph Collins, William Timothy A.B. 1948, A.M. 1950, The George Washington University	D.C. Md. N.Y. D.C. Va. N.Y.	Conwell, Emma Mary Conwell, Patricia G. B.S. in Ed. 1951, University of California at Los Angeles A.M. 1949, Claremont College	S.C. Calif.
Collette, Martin A.B. 1951, University of California	N.Y.	Cook, Audrey Farnshaw	Md.
Colman, Paul Matthew Combs, Louis Robert A.B. 1939, Mahlenberg College	D.C. Pa.		
Collins, Carol Ann Cotton, Melvin B.S. 1950, Miami University	D.C. Md.		
Colter, Stanley, Jr. A.B. 1952, Syracuse University	N.Y.		
Combs, Edward Lee Combs, Margaret Eleanor A.B. 1950, Florida State University A.B. in I.S. 1947, University of North Carolina	Ind. Fla.		
Combs, Roy Combs, Lucille Combs, Mary Jane A.B. 1949, Trinity College A.M. 1951, Radcliffe College Combs, Emmett Jerome B.S. in I.S. 1950, Georgetown University	Md. Va. D.C.		
Compter, Paul Richard, Jr. Compton, Norman Herbert A.B. 1950, The George Washington University	Ill. Md. Va.		
Comstock, John Raymond Conahan, John Bernard	Md. D.C.		

Cook, Charles David	Go.	Corbin, Douglas Tenny	N.Y.
Cook, Charles Edwin	Kans.	B.S. 1950, St. Lawrence University	D.C.
Cook, Frances Rowena	Ark.	Cordom, Damon Nicholas	D.C.
A.B. 1952, The George Washington University		Cordua, Alex Michael	N.Y.
Cook, George Selwyn	Mich.	Corey, Alexander	Calif.
Cook, Harriet Boudinet	N.H.	A.B. 1928, Harvard University	Va.
A.B. 1916, Middlebury College		Corey, Celia	Md.
A.M. 1951, The George Washington University		Corey, William Robert	D.C.
Cook, Helen Acker	D.C.	A.B. 1948, Syracuse University	
Cook, LaRue Llewellyn	Md.	Cornblatt, Barry Herman	
A.B. 1945, Washington Missionary College		Cornbrooks, James Ernest	D.C.
Cook, Nancy Julia	N.C.	B.S. 1953, Florida State University	D.C.
Cooke, Richard Kissam	Md.	Cornelius, Kenneth Thompson	Va.
B.S. 1949, University of Maryland		Cornier, Charlotte Louise	Md.
Cooksey, Doris Elizabeth	D.C.	Cornwell, Walter Aden	Va.
Cooler, Anita Louise	Md.	Cornwell, Anna Moul	Va.
Cooler, Catherine Phillips	Va.	Cornwell, Clifton Von Culin	D.C.
B.S. 1935, Mary Washington College		Cornwell, Ernest Roy	
Cooler, Ray Nelson, Jr.		Corob, Raymond B.	
Coolick, Allan Bronson		A.B. 1948, University of California at Los Angeles	Va.
Coomas, Charles Soden		Corona, Paul Hohn	Va.
Coon, Elvin Ralph, Jr.	W.Va.	Correll, Donald Ray	D.C.
B.S. 1946, University of Michigan		Corrigan, Anne Mary	D.C.
Coon, Robert R.	Ohio	Corrigan, Doris Theresa	D.C.
Cooper, Boyd	Va.	Cosen, Alice Ragenhild	Md.
Cooper, Donald Hamilton	Va.	Cosgrove, Barbara Ann	N.Y.
Cooper, Emmett Monroe	Md.	Cosgrove, Thomas Edward	R.I.
Cooper, Eugene Stephen	N.Y.	Coslowe, Benjamin Peter	
B.L.E. 1950, Cornell University		Costagliola, Francesco	D.C.
Cooper, George Huners	Va.	B.S. 1941, U.S. Naval Academy	D.C.
B.M.E. 1951, The George Washington University		Costakis, Ann	D.C.
Cooper, Gordon Howard	Va.	Costanzo, Felix	Va.
Cooper, Harrison Lee	Md.	Costello, Bartley Alexander	
Cooper, Jack Ross	Md.	Costello, John Henry	Ill.
A.B. 1948, Queen's University, Canada		A.B. 1950, University of Cincinnati	N.Y.
A.M. 1952, The George Washington University		Costello, Vivien Jeanne	
Cooper, Joseph Emerson		Coster, Gerard Holoman, Jr.	Mass.
A.B. 1938, Indiana University		A.B. 1941, Harvard University	Md.
Cooper, Larry Allen		Costin, John Peter, Jr.	Ohio
Cooper, Mary Frances		Costinett, John Henry	D.C.
Cooper, Paul David	Va.	Costolo, William Frederick	Md.
A.B. 1950, Western Maryland College		Cotham, Robert Bruce, Jr.	Va.
Ed.M. 1943, University of Maryland		Cotier, Mary Trail	
Cooper, Richard W.	D.C.	Cotnam, Patricia Ferrell	D.C.
Cooper, Robert Houston	S.C.	A.B. 1946, A.M. 1947, University of Utah	Va.
Cooper, Samuel	Md.	Cotten, Rebecca Anne	Wash.
B.S. 1951, Johns Hopkins University		Cotter, George Roland	
Cooperman, Arthur Irwin	D.C.	Cotter, Patricia C.	N.Y.
A.B. 1951, University of California at Los Angeles		A.B. 1953, University of Washington	
B.S. 1952, U.S. Coast Guard Academy		Cotter, Stanley, Jr.	D.C.
Coopersmith, Edward Gerald	D.C.	A.B. 1952, Syracuse University	
Cope, Estelle Meyer	D.C.	Cottrell, Alfred Charles	D.C.
Cope, William Willard	D.C.	B.S. 1951, University of Maryland	
Copes van Hasselt, Roelof Hendrik Albert	Va.	Couble, Judith Patricia	Md.
Copier, Richard Eldridge		B.S. 1951, Duke University	
Copier, William Gordon	Iowa	Conkling, Paul Mackin, Jr.	D.C.
Coppage, Arthur Maxam	D.C.	B.S. 1951, University of Maryland	
B.S. 1951, University of Missouri		Coulter, George Prothro	
Copsey, Jesse Fabian	Va.	A.B. 1951, University of California at Los Angeles	Mich.
Coram, Frank John		Coulter, Patricia Florence	Ill.
A.B. 1950, San Diego State College		A.B. 1945, University of Michigan	Calif.
Corbett, George Perry	Md.	Councils, Mabel Harriet	
Corbier, Catherine Marie	Pa.	Countrymen, Louis Kenneth	D.C.
A.B. 1951, Pennsylvania State College		A.B. 1953, University of California	D.C.
Corbin, Clair Stever, Jr.	D.C.	Couper, William Paul	D.C.
		Courembia, Louis Peter	Va.
		Courtney, Dorothy Joanne	
		Courtney, Joseph Clarence III	
		A.B. in Ed. 1952, The George Washington University	

Crockett, Warren Reed	D.C.	Cullen, Darla Lee	Va.
Crockett, Wendell Ryder	Hawaii	Cullen, Harry Edward	Id.
A.B. 1951, Western Michigan College of Education		Cullen, Garrett Joseph, Jr.	Va.
Crofoot, Kenneth Stanley	Md.	B.S. 1949, Boston College	Hawaii
A.B. 1948, Washington Missionary College		Cullen, Michael	Hawaii
Cromwell, Phyllis Virginia	D.C.	Cullen, Rita Joyce	Md.
Cromas, William Joseph, Jr.	S.C.	Cullen, Leon Victor	Ohio
B.S. 1949, College of Charleston		Cullen, Paul Joseph	Va.
Croom, Robert Gerald	Fla.	Culley, Patricia Jeanne	N.H.
Crosby, Edward Oscar	Ind.	Cullman, Alver Gertrude	D.C.
Crosby, Marian Hosfeld	D.C.	Culp, Theodore Francis	Md.
Cross, Michael F.	Md.	Culver, Donald McCane	Md.
A.B. 1941, Queen's College		Culver, John Arthur	Md.
A.M. 1950, Columbia University		Culver, John Rush	Mich.
Crossland, Elton Merwin	D.C.	Cumming, William Stoner II	N.Y.
A.B. 1950, University of Maine		B.S. 1951, Michigan State College	Md.
Croteau, Jeannette Constance	N.H.	Cummings, Donald Joseph	Mass.
Crouch, Edna Louise	Va.	Cummings, Frank	
A.B. 1940, Georgia State College for Women		Cummings, Nancy Ann	Mo.
Crouch, Robert Brighton	Idaho	Cummings, Nancy Carol	Va.
B.C.E. 1946, University of Idaho		B.J. 1952, University of Missouri	N.C.
Crouse, Ella Louise	Ind.	Cundiff, Jack Dillon	Va.
Crowe, John Francis, Jr.	D.C.	Cunningham, Ellen Lewis	D.C.
B.S. 1949, U.S. Naval Academy		Cunningham, Barbara Ann	Md.
Crowe, Natalie Festak	D.C.	Cunningham, Carolyn Maryclare	Va.
Crowell, Stewart Preston, Jr.	Mass.	Cunningham, Mary B.	D.C.
Crowley, Brian	Md.	Cunningham, Mary Jane Catherine	D.C.
Crowley, Cornelius Justin	Md.	Cuny, Ann Wharton	D.C.
Crowley, Francis Joseph	Va.	Cunyo, Dorothy Betty	N.Y.
B.S. 1948, Norwich University, Vt.		Cupp, Florence Lorena	
Crowley, James Worthington	Tenn.	Cutler, William S. J.	D.C.
A.B. 1950, The George Washington University		B.M.E. 1948, Brooklyn Polytechnic Institute	
Crowley, Line Frances	Md.	Curran, Carmelita Jean	D.C.
Crowley, Julia William	D.C.	A.B. 1952, University of Maryland	Md.
A.B. 1949, College of the City of New York		Curran, Francis Joseph	Va.
Crowley, Katharine Poindexter	D.C.	Curran, Josephine Ann	
LL.B. 1942, National University		Curran, Eleanor Gayle	D.C.
Crowley, Thomas Michael Joseph	N.Y.	B.S. 1945, Farmville State Teachers College	
Crowther, James Wesley	Idaho	Curry, Bryce Quentin	W.Va.
B.S. 1952, Utah State Agricultural College		A.B. 1951, The George Washington University	D.C.
Crudden, Joseph C.	Va.	Curry, Evelyn Herbig	D.C.
B.S. 1942, Georgetown University		Curry, Len Alonzo	
Crumley, Howard Lee	D.C.	Curry, Mary Catherine	D.C.
Crumly, Vivian Mabel	D.C.	B.S. 1942, New York State College for Teachers	
Crummett, John David	D.C.	A.M. in Ed. 1950, The George Washington University	Va.
A.B. 1941, The George Washington University		Curry, Mary Sutherland	Alaska
Crumpton, George W.	Va.	B.S. 1949, American University	Ohio
Crumpton, Richard Wilcox	Va.	Curry, Lee Bates	D.C.
A.B. 1949, University of Minnesota		Curry, Allen Benjamin	D.C.
Crumpler, Roland	N.C.	B.C.E. 1943, Penn College	N.Y.
LL.B. 1952, The George Washington University		Curtis, Jean Grey	
Crumpton, Eli N.	N.Y.	Curtis, Kenneth Edward	D.C.
A.B. 1940, Brooklyn College		Curtis, Sandra Gabriel	
Crothers, Jack Carter	Md.	LL.B. 1951, St. John's University	
Croyle, Joseph Homer	D.C.	Curtis, Vincent	Utah
Crozier, Betty Warner	D.C.	A.B. 1944, Arizona State Teachers College, Tempe	Idaho
Croyle, Mary E.	D.C.	A.M. 1945, Columbia University	
A.B. 1944, Southwest Texas State Teachers College		Cutler, Clifford Noble	Va.
Cudmore, Patrick Hilbert	D.C.	Cutler, Elvin James	
Cudmore, Raymond Stanley	D.C.	B.S. 1943, Idaho State College	
C.H. Williams August 1950	N.Y.	Cutler, Joseph Thomas	Va.
A.B. 1950, Adelphi College		A.B. 1950, College of William and Mary	Mass.
Culkin, Charles Walker	Va.	Cutler, Pauline P.	Mich.
		Cutler, Bernice Jane	
		Cutlip, Charles Vincent	

Cutter, Fred A.B. 1949, A.M. 1950, Boston University	Md.	Damazo, Herbert	D.C.
Cutting, Mabelle Frances	D.C.	D'Ambrosio, Joseph Ettore	D.C.
Cykowski, Stanley A.B. 1946, University of Massachusetts	Va.	Dambroski, Stanley George	Md.
Cyphers, Russell James	Fla.	Dameron, Charles Edward	D.C.
Cyr, Matcella M.	Ill.	Dameron, Lona M.	D.C.
Czajkowski, Stanley Thomas	Del.	Dameyer, Richard Welton	Wash.
Czapiewski, Robert Crispin	Va.	A.B. 1947, University of Washington	
B.S. in Forestry 1951, Pennsylvania State College		A.M. 1948, Fletcher School of Law and Diplomacy	
		M.B.A. 1950, Harvard University	
		D'Amico, Louise Joseph	Ohio
		D'Amico, Nick Anthony	Pa.
		D'Amico, Georgia Ruth	D.C.
		Damon, Bert Lee, Jr.	Md.
		B.M. 1951, University of Michigan	
		Damon, John Douglas	Texas
		B.S. 1952, West Texas State Teachers College	
		Dana, William Christian	D.C.
		Danahy, Ronald Clayton	Md.
		Damon, George	Pa.
		D'Andrea, Eugene Peter	N.Y.
		Danford, Henry Warren	Ill.
		A.B. 1950, Yankton College	
		Danford, James Arthur	Ohio
		B.S. 1950, University of Dayton	
		Daro, Mabelle Marr	Va.
		A.B. 1948, University of California	
		Daniel, Warren	D.C.
		Daniel, Barry Lloyd	N.Y.
		Daniel, John James Sharman	Ga.
		B.S. 1942, U.S. Naval Academy	
		A.M. 1948, University of California at Los Angeles	
		Daniel, Sidney Theodore	Va.
		A.B. 1942, New York University	
		Daniel, George Foster	Md.
		Darby, John James	Mich.
		Darby, John George, Jr.	Va.
		B.S. 1942, U.S. Naval Academy	
		Darmanin, Albert	Pa.
		B.S. 1940, Temple University	
		A.M. 1951, The George Washington University	
		Dannan, Louis Ambvat	T.C.
		Danz, Norbert Paul	I.C.
		Dances, Edward Harry	Va.
		Darling, Joseph Warren	Fla.
		B.S. 1951, Harvard University	
		M.B.A. 1954, University of Pennsylvania	
		Darmstad, Milton	Va.
		Darnell, Louise Marie	D.C.
		Darnold, Robert L. Lohman	Va.
		Darham, Harry Munster	Va.
		Darlow, Donald William	D.C.
		B.S. 1950, The George Washington University	
		Darwin, Mary Anne	D.C.
		Daugherty, Floyd Norton, Jr.	Va.
		B.S. 1950, The George Washington University	
		Daugherty, Otto Hill, Jr.	Ohio
		B.S. 1951, American University	
		Daughtry, Martha Angela	N.C.
		Daum, Jere Jack	Pa.
		B.S. 1951, Franklin and Marshall College	
		D'Auria, Martin Joseph, Jr.	N.J.
		Dausman, Grover Frederick	Va.
		Dawallen, Nancy Lee	Va.
		Davenport, Mary Alice	D.C.
		Davenport, May M.	D.C.

Davenport, Milton Monroe	Va.	Davis, Robert Henry, Jr.	D.C.
A.B. in Govt. 1953, The George Washington University		Davis, Robert Lee	Wash.
Davenport, Thomas Ira	Md.	Davis, Sarah Jane	Va.
B.S. 1943, 1947, M.S. 1951, Pennsylvania State College		Davis, Spear John	
David, Harry	Va.	A.B. 1950, Pennsylvania State Teachers College, Indiana	Md.
Davis, Robert Spencer	D.C.	Davis, Thomas Eugene	Calif.
B.S. 1938, University of California		Davis, Walter	D.C.
A.M. in Govt. 1949, The George Washington University		Davis, Walter Allen, Jr.	
Davidson, Dorothy Sylene	D.C.	B.S. 1947, Alabama Polytechnic Institute	D.C.
Davidson, Gerald Daniel	N.J.	Davis, Wayne Beverly	Pa.
Davidson, Mary Duley	D.C.	Davis, William Henry	
Davidson, Max Louis	Va.	A.B. 1951, Bowdoin College	Colo.
Davidson, Roy Aaron	Md.	Davis, Zachary Taylor	D.C.
A.B. 1951, The George Washington University		Davidson, Margaret Cammer	Va.
Davies, John Merrick	D.C.	Davison, Mark Leonard	Va.
Davies, Peter Merrick	D.C.	Davitt, Alan Park	Colo.
Davis, Albert Nelson	Va.	Davitt, Edward Patrick	
Davis, Alice Dorothy	Ohio	Davitt, William John	
Davis, Allen Clayton	Tenn.	B.S. 1947, University of Colorado	N.Y.
Davis, Betty Ann	Va.	D'Avolio, Ralph Michael	D.C.
Davis, Betty Joan	Va.	Davy, Lila Ewart	Va.
Davis, Carl Ciel	Va.	A.B. 1953, Hood College	Va.
B.S. 1942, Oklahoma Agricultural and Mechanical College		Dawdy, E. Calvin	D.C.
LL.B. 1949, University of Oklahoma		Dawdy, Pauline Vore	
LL.M. 1951, The George Washington University		Dawe, Dorothy Shaen	
Davis, Charles Ernest	W.Va.	A.B. 1952, College of the Holy Names, Calif.	D.C.
Davis, Elton Daniel	N.J.	Dawson, Robert Martin	
Davis, Frank Hall	Del.	B.Mus. 1939, Catholic University	Utah
A.B. 1946, Georgetown University		Dawson, Shelton Phelps	
Davis, Gladys Olive	Va.	A.B. 1952, The George Washington University	Va.
B.S. 1928, M.S. 1941, Indiana State Teachers College		Day, Carl Eugene	Md.
Davis, Glenn Allen	Calif.	Day, Elizabeth Anne	1939
Davis, Horace Miller	D.C.	Day, Ernest Herbert	
Davis, Howard Rodel	Ill.	A.B. 1941, Oberlin College	
Davis, James Othello	Md.	LL.B. 1950, The George Washington University	D.C.
Ph.D. 1942, University of Missouri		Day, Helen	D.C.
Davis, John Griffith	D.C.	A.B. 1940, Iowa State Teachers College	
Davis, Joseph Tully	D.C.	B.S. 1944, Wilson Teachers College	Va.
A.B. 1950, St. Anselm's College		Deal, Josephine Russell	Va.
Davis, Karl Ernst	D.C.	Dean, Agnes Mary	Tenn.
Davis, Lawrence Willard	Md.	Dean, Frank B.	
Davis, Lorimer Nathaniel	Va.	A.B. in Govt. 1952, The George Washington University	Va.
A.B. 1942, Marquette College		Dean, Hazen Stewart, Jr.	Va.
Davis, Margaret Ernestine Smith	Va.	B.S. 1917, University of Illinois	N.C.
A.B. in Ed. 1952, The George Washington University		Dean, Mills III	
Davis, Martin Thomas	Conn.	Dean, Raymond Lee	D.C.
B.S. 1948, Rensselaer Polytechnic Institute		B.S. 1918, University of North Carolina	Conn.
M.S. 1951, The George Washington University		Dean, Shirley Louise	N.Y.
Davis, Mary Anne	D.C.	DeAngelis, Julia Marie	
A.B. 1944, University of Chattanooga		DeAngelis, Louis Benjamin	D.C.
Davis, Menckel Arbutus	Md.	B.S. in P.E. 1951, The George Washington University	D.C.
Davis, Olga	N.Y.	Dear, Frances Brook	
B.S. 1949, Columbia University		Death, Martha Robinson	D.C.
Davis, Paul Dallas	Va.	A.B. 1950, University of Georgia	Va.
B.S. in Ed. 1941, Southeast Missouri State College		DeBardeleben, John Frederick	Kans.
Davis, Paul Sprague	Ill.	Deboise, Neilson Thomas	
A.B. 1931, Harvard University		DeBlois, M. Eleanor Nash	
J.D. 1942, University of Chicago		A.B. 1946, The George Washington University	Belgium
LL.M. 1952, Catholic University of America		DeBoeck, Jean Baptiste Louis	N.Y.
Davis, Robert Edwards	Va.	Debons, Albert Frank	Neb.
		B.S. 1953, Syracuse University	N.Y.
		DeBord, Robert Keith	
		DeCaro, Francis Martin	
		A.B. 1951, Syracuse University	

Students Registered

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DeCastro, Joaquin Bernabe A.B. 1936, University of Puerto Rico A.M. 1941, Columbia University	N.J.	DeLio, Anthony Peter B.S. 1951, Brooklyn Polytechnic Institute	Va.
Decker, Gerald Yale B.S. in Pharm. 1951, The George Washington University	D.C.	Dell, Albert Hampson DeFinger, Donald Robert	Md. Ohio
Deck, William Maude II A.B. in Govt. 1952, The George Washington University	D.C.	DeFinger, William Eugene Demar, Robert E.	Va. Va.
Decker, Allan Iswin Decker, Charles Seymour, Jr. Decker, Elizabeth Ruth	Md. Md. Pa.	A.B. 1951, Harvard University DeMaras, James Harry, Jr. DeMartino, Irene Tamara	Va. D.C. Md.
Decker, George Elwood DeCourcy, Bernard Joseph M.Ed. 1945, Boston University	D.C. Md.	Dembur, Daniel William B.S. 1942, The George Washington University	D.C.
DeDrickson, Peggy Ann Deeb, George A.B. 1951, Colby College	Va. Maine	DeMeyer, Charles Armand Comm. Engineer 1949, University of Brussels	D.C.
Dees, Donald Aloysius Dees, Paul Kenneth Dees, Louis Tidwell	D.C. Va. D.C.	Deming, Diana DeMino, Leonard Joseph	D.C. D.C.
A.B. 1950, The George Washington University	D.C.	DeMonge, Donald Edward Dempsey, Howard Calvin	D.C. D.C.
Deet, Lucile Short A.B. 1929, University of Kentucky	Va.	Dengo, Omar A.B. 1941, Lawrence College	Costa Rica
DeGale, Sarah Lewis DeGard, Bruce Karl, Jr. B.S. 1953, University of Maryland	D.C. Calif.	Denham, Sara Belle Denning, Leland Sampson	Ky. Va.
DeFrance, George Leonard III DeFryas, Charles Mumford DeGarmo, Charlotte Lou	D.C. Md. D.C.	DeNiss, Perry LeRoy DeMoss, Eleanor Katherine	D.C. Colo.
Depler, Stanley E. A.B. 1951, Pennsylvania State College	Va.	A.B. 1951, University of Arizona Dennison, L. Evelyn	W.Va.
DeFoy, John Gobel DeGaze, Everett Thomas B.S. 1949, Massachusetts Institute of Technology	Md. N.Y.	Dent, James Armistead, Jr. Dent, John Francis	D.C. D.C.
DeHaven, Phyllis Jeannette A.B. 1951, College of William and Mary	Va.	A.B. 1911, Syracuse University Denton, James Boyce	Ark.
Dehn, Lucy Martha Deichman, Arnold Francis A.B. 1951, The George Washington University	D.C. Md. D.C.	Denver, Kathleen Mary dePapp, Edwin G.	N.Y. Va.
DeJong, Thomas Carter A.B. 1951, Western Maryland College	Va. Md.	A.B. 1924, University of Budapest DePasquale, Anthony Bruno	Va.
DeKoster, Heras Leo A.B. 1942, New Jersey State Teachers College Montclair	D.C.	B.S. 1952, Pennsylvania State Teachers College, Indiana	
DeLancey, Robert Edward A.B. 1948, University of Louisville	D.C.	DePaul, Albert Ignatius D'Pino, Albert Lincoln	Md. D.C.
DeLange, Doree Manning A.B. 1951, Bowen University	Ky.	D'Pino, Carl Michael DePorte, Paul Vital	Pa. Md.
DeLeon, Dennis Patrick A.B. 1951, Wittenburg College	D.C.	A.B. 1942, Rutgers University Depaty, John G., Jr.	Va. Md.
DeLeon, John Alvarius A.B. 1950, The George Washington University	Pa. Mich.	Depot, Woodrow Grimes Derrick, Helen Caroline	Md. Md.
DeLaney, Patricia Deane, Robert Joseph E.S. & P.E. 1944, U.S. Naval Academy	D.C. D.C.	A.B. in Ed. 1941, Winthrop College A.M. in Ed. 1942, Columbia University	
Deane, William John, Jr. DeAngelis, Joseph Loomis DeLeon, James Robert	Va. N.Y. Pa.	Derricks, Lloyd James A.B. 1947, Kenyon College	D.C.
DeLeon, Alphonse Johannes Maria J.D. 1951, University of Utrecht, The Netherlands	D.C.	Der Stephanian, Odian A.B. 1952, Harvard University	Iran
DeLeon, John Anthony DeLeon, Gail Gize	Pa. D.C.	De Rada, Lawrence Joseph Der Verstanian Anna	Mass. Mich.
DeLeon, Concepcion Montenegro	Philippines	DeSautere, Hamilton A.B. 1946, Yale University	D.C.
		I.L.B. 1948, Harvard University I.L.M. 1951, McGill University	
		DeSautere, May Ruth A.B. 1948, University of California at Los Angeles	D.C.
		DeSautere, Thomas A.B. 1952, Queens College	N.Y.
		DeSoto, Gloria Viera DeSola, Sara Thompson	N.J. D.C.
		A.B. 1954, Wellesley College A.M. 1957, Radcliffe College	
		Desmond, James Francis Despres, Robert Verne	Md. Utah
		Despres, H. Philip DeTouss, Marlon William	D.C. Mich.
		A.B. 1951, University of Michigan DeTurk, Philip Henri	Md.

Detweiler, Mark George	Pa.	Dieffenbach, Ann	Md.
A.B. in Govt. 1953, The George Washington University		Diegel, Ruth Valerie	Va.
Detweiler, Charles Robert	D.C.	Diegelmann, Marion Faith	Md.
Detweiler, Donald Scaife	D.C.	Diehl, Helen Ann	D.C.
Detweiler, Harry Grubb	Pa.	Diehl, Sylvester James	Pa.
B.S. 1956, Pennsylvania State Teachers College, West Chester		Dierden-Crockett, Jeffery Rosher	D.C.
A.M. in Ed. 1952, The George Washington University		A.B. in Govt. 1951, The George Washington University	Va.
Detwiler, Mary Lucretia	D.C.	Dieter, Carlisle Lyon	Va.
Deuber, Frederick Joe	Ohio	Dieter, Rose Ward	Md.
B.S. 1953, Ohio State University		Dietrich, Earl Donald	D.C.
Devan, Richard	D.C.	Dietrich, George Sanderson	Kans.
Deverall, Catherine Noble	Va.	Dietrich, Jack Mitchell	Pa.
Deverman, George	D.C.	Dietrich, Ruth Emma	Fla.
DeVester, Walter Franklin	Pa.	B.S. in Ed. 1950, Pennsylvania State Teachers College, Mansfield	
Dewet, Clinton Miller	Va.	Dietz, Glenn Allen	Pa.
A.B. 1951, Bridgewater College		A.B. in Ed. 1950, The George Washington University	
Devin, Charles, Jr.	Md.	Diets, Walter Eugene	D.C.
B.S. 1953, The George Washington University		B.S. 1952, Massachusetts Institute of Technology	
Devine, Edward Peter	Md.	Diñore, Joseph Andrew	France
DeVivo, Anita Paula	Pa.	B.C.E. 1949, Manhattan College	D.C.
Devlin, Leighton Hugh	D.C.	diGirola, Viviane	
Devlin, Walter James	N.J.	DiGiulian, Anna Maria	Tenn.
DeVries, William Henry	Calif.	B.S. 1939, Wilson Teachers College	
Dew, Patricia Ann	Md.	Dillehay, Thomas Jefferson, Jr.	
DeWaal, Dorman Paul	Pretoria	B.B.A. 1927, A.M. 1929, Baylor University	D.C.
DeWberry, Linnear Wade	Va.	J.D. 1952, The George Washington University	
Dewey, John Sanford	Calif.	Dilli, Nancy Tucker	Ark.
Dewey, Mabel Bobb	D.C.	A.B. in Govt. 1952, The George Washington University	
A.B. 1949, Pomona University		Dillingham, Arthur W	Ill.
Dewins, Rosalie Nestor	D.C.	A.B. 1939, University of Arkansas	
DeWitt, Harvey Jennings	Calif.	Dillon, Edna Lyle	Md.
Dewitt, Henry Arthur	Va.	B.P.E. 1942, American College of Physical Education, Ill.	
Dewitt, Kurt	Calif.	Ph.B. in Ed. 1950, DePaul University	N.Y.
A.B. 1941, Reed College		Dillon, John Henry	D.C.
DeWitt, William Bradley	Md.	B.S. 1954, Bates College	
A.B. 1948, Howard College		Dillon, Rachael Louise	Ill.
A.M. 1952, The George Washington University		Dilorenzo, Jack Thomas	Md.
Dexter, Harold S.	D.C.	L.L.B. 1948, University of Buffalo	Va.
Devo, Beverly Baisley	Va.	Dimock, Dorothy	
A.B. 1944, The George Washington University		Dimmette, Elsie Shields	
Dhyse, Frederick George	Md.	Dinan, John Arthur	Va.
A.B. 1943, University of California		B.S. in Ed. 1951, Massachusetts State Teachers College, Salem	Ky.
Dial, Blackwell Williams	Md.	M.S. in Ed. 1952, Boston University	Mass.
A.B. 1949, University of Wyoming		Dinnacen, Helen Frances	D.C.
Diamond, Lois Wilhelm	D.C.	Dinswelder, Carl Finch	Md.
Diamond, Louis Howard	D.C.	Dion, Edward Joseph, Jr.	N.Y.
Diamond, Stanley	N.J.	Dion, Marie Berthe	
Dingle, Duane William	Md.	DiPietro, Louis Pasquale	N.Y.
DHase, Paul Francis	Mass.	DiRe, John Joseph	Va.
Dick, Charles Herbert	Md.	B.S. 1953, McGill University	
A.B. 1950, University of Maryland		DiRe, Leonard Benjamin	D.C.
Dick, Mark Alexander	Pa.	B.S. 1953, McGill University	Va.
B.S. 1941, Pennsylvania State College		DiSilvestro, Baldwin Michael	D.C.
Dickens, Martha Buell	D.C.	B.C.E. 1951, Manhattan College	Va.
Dickenson, William Edward	D.C.	DiStefano, Elsie May	D.C.
B.S. 1952, American University		Diven, Alice Louise	N.C.
Dickerson, Reid Nelson	Md.	Dix, Edgar La Rue	
Dickerson, Ruth	Ky.	Dixon, Benjamin Franklin III	N.C.
Dickerson, Wilton Harry	Md.	A.B. 1910, University of North Carolina	Md.
A.B. 1948, A.M. 1949, University of Minnesota		Dixon, Beulah Pearl	
Dickson, Mary Joan	N.J.	Dixon, Cloyce Irven, Jr.	Va.
B.S. 1941, Rider College		A.B. 1951, The George Washington University	
Dickson, William Francis	Va.	Dixon, Cornelia Baldwin	
Didion, Joseph Robert	D.C.		
B.Arch. 1956, Catholic University of America			

Dixon, David George	D.C.	Donly, Harriet R.	D.C.
A.B. 1953, Brigham Young University		A.B. 1952, Emanuel College	
Dixon, James Thorne	Va.	Donnellan, Dorothy Clare	Md.
Dixon, Margaret Elizabeth	D.C.	Donnelly, Charles Jerome	D.C.
Dixon, Peter Abbott	D.C.	Donnelly, John Lippin	Va.
Dixon, Robert Galloway, Jr.	Md.	Donnelly, Orville Wright	Md.
A.B. 1941, Ph.D. 1947, Syracuse University		A.B. 1943, Sweethome College	
Dixon, Ronald James	Va.	M.S. 1952, The George Washington University	
A.B. 1951, The George Washington University		Donnelly, Owen James	D.C.
Dixon, Ronald Wilson	Va.	Donnelly, Victor Francis	Va.
Dixon, William Charles	Utah	B.S. 1941, Seton Hall College	
A.B. 1952, Brigham Young University		Donnelly, William James, Jr.	D.C.
Dixon, William Deemy	Md.	L.L.B. 1958, The George Washington University	
A.B. 1943, Emory and Henry College		Donner, R.H. Ellen	Va.
L.L.B. 1948, University of Richmond		Donston, Louis John, Jr.	N.I.
Dizzen, Thomas William	Va.	Donoghue, Joan Patricia	D.C.
A.B. 1953, Municipal University of Wisconsin		Donoghue, John Francis	D.C.
Dobson, Marina Aurelia	D.C.	A.B. 1951, Catholic University of America	
Dobson, Robert Lloyd	D.C.	Donohue, John Henry	Va.
B.S. 1947, Indiana University		Donovan, Catherine Angela	D.C.
M.S. 1950, University of Illinois		B.S. 1947, Pennsylvania State Teachers College, California	
Dobransky, Holston John	D.C.	Donovan, Mary Kay	N.Y.
A.B. 1949, New York University		A.B. 1951, Manhattanville College of the Sacred Heart	
Dobson, Philip Bradley	Va.	Dowley, Wilbur Jay	Md.
Dodd, Harold Gregory	N.Y.	Dowen, Sharon Louise	Va.
Dodd, Richard Francis	N.Y.	D'Orazio, Carol Marie	N.Y.
A.B. 1952, Syracuse University		Dorem, Alan Arthur	D.C.
Dodds, Chas. Yandell, Jr.	D.C.	A.B. 1952, Oberlin College	
A.B. 1951, The George Washington University		Dorems, Stanley Dodge	Ill.
Dodt, Chas. Irving, Jr.	D.C.	B.S. 1950, University of Illinois	
Dodt, Edward Williams	D.C.	Dorfman, David	D.C.
M.S. 1950, Georgetown University		Dorfman, Milton Sigmund	D.C.
Dodt, John Edmund	Va.	Dorshi, John Jerome	D.C.
Dodson, William Bernard	Va.	Dorn, Jane	D.C.
Dodson, Maria Isabel	D.C.	A.B. 1949, Mills College	
Dodson, Mary Morefield	D.C.	Dorn, Margaret Elizabeth	Pa.
Dodsonburg, Helen Johanna	D.C.	A.B. 1941, Valparaiso University	
Dodson, Frances W.	Ill.	Dorn, Barbara Jeanne	D.C.
Dodson, Jack	Fla.	Dorson, Norman	N.Y.
Dodson, Martha Jean	Pa.	A.B. 1951, Columbia College	
A.B. 1950, St. Joseph College		L.L.B. 1953, Harvard University	
M.Ed. 1951, University of Miami		Dorsey, D. Gene Ann	N.M.
Doherty, Neil Francis	Md.	Dorsey, Gary Houston	Md.
A.B. 1952, Marquette College		Dorsey, William Walter	N.I.
Doherty, Robert Allen	Md.	Dorwood, Albert J.	Va.
A.B. 1951, University of Idaho		B.S. 1946, University of Pittsburgh	
Doherty, John Henry	R.I.	Doston, Frederick	Fla.
A.B. 1946, Holy Cross College		B.S.A. 1954, University of Florida	
Doherty, Katherine Grieswelle	D.C.	Doswell, Manuel III	Va.
Doherty, Fred Helen	D.C.	A.B. 1957, Tulane University	
B.S. 1941, A.M. 1947, The George Washington University		Dots, Kathleen Anne	D.C.
Domin, John Thomas	Wis.	Dots, Carol Helen	Va.
B.S. 1951, University of Wisconsin		B.S. 1941, University of Virginia	
Domin, Grace Magall	D.C.	Douet, Louis Edward	Md.
Domin, William Royce, Jr.	Tenn.	Dougherty, Dale Alma	Va.
A.B. 1951, Marquette College		Dougherty, Harold Joseph	Md.
Domin, Robert Italy	Texas	Dougherty, Louis Leighton	Va.
A.B. 1951, Holy Patrick	D.C.	Dougherty, Agnes Kelly	Va.
Domin, H. G. Patrick	Va.	Dougherty, James Andrew, Jr.	D.C.
Domin, Edward Brennan	Neb.	Dougherty, John C.	N.Y.
B.S. 1951, M.F. 1949, South Dakota State College of Agriculture and Mechanical Arts		Dougherty, Paul Gossweiner	D.C.
Domin, James Leo	D.C.	Dougherty, John Robert	Va.
Domin, Emanuel	D.C.	Dougherty, Paul Maxwell, Jr.	N.J.
Dow, James Patrick	D.C.	Dougherty, Ralph Thomas	Va.
Dow, Charles Paul	Va.	Douma, Allen Varrin	
		B.S. 1950, University of Minnesota	
		Dow, Brenda Louise	Md.

Dow, Mary	Mass.	Druckenmiller, Donald James	Va.
A.B. 1951, The George Washington University		B.S. in P.E. 1950, The George Washington University	Va.
Dow, Priscilla Josephine	Mich.	Drummond, Thomas Darrell	D.C.
Dow, Thomas William	Md.	A.B. in Ed. 1953, The George Washington University	D.C.
B.S. 1928, M.S. 1941, Purdue University		Drury, Charlotte Peters	D.C.
Dowdy, Sam Gene	Mo.	A.B. 1947, Wheaton College	
A.B. in Govt. 1946, A.M. in Govt. 1948, The George Washington University		Drury, Paul Oliver, Jr.	
Dowling, Ellen Condon	D.C.	B.S. in Eng. 1953, The George Washington University	
Downer, Marion Price	Va.	Druse, Katharine	D.C.
Downes, Edward Patrick	Calif.	A.B. 1917, Iowa Wesleyan College	
A.B. 1952, Loyola University of Los Angeles		A.M. 1948, Columbia University	D.C.
Downey, Agnes Marie	Md.	Dubais, Bernard Andre	D.C.
A.B. 1951, Dunbarton College		A.B. 1958, LL.B. 1945, University of Paris	Md.
Downey, Carroll Edward	D.C.	Dubb, Weida Beatrice	Md.
B.S. 1950, Columbia University		Dubendorf, Jeanne	
M.S. 1951, State University of Iowa		Dubester, Dorothy Ennis	Pa.
Downey, William Jerome, Jr.	N.Y.	A.B. 1941, Brooklyn College	Puerto Rico
Downing, James Bernard	D.C.	Dubitsky, Rose	Md.
B.S. 1952, St. Francis College, Brooklyn		Dubocq, Francis Manuel	Va.
Downing, Paul Kenneth	D.C.	Ducharme, Gloria Mary	
Downs, Edward Alley	D.C.	Duckett, Richard Baruch	
A.B. 1950, Harvard University		Duckworth, Alan Clark	
Downs, Justin Gaylord, Jr.	Va.	B.S. 1951, The George Washington University	D.C.
Downs, Robert Jack	Okla.	Duda, Paul Joe	Iowa
B.S. 1950, M.S. 1951, The George Washington University		Duffley, James William	D.C.
Dowson, Carmen Elizabeth	Mich.	Duff, Gladys Ann	Md.
Doyle, Edward Jerome	Va.	Duffy, Lucy E.	D.C.
B.S. in F.S. 1948, Georgetown University		B.S. Ed. 1943, Edgewood College	
Doyle, Edward Joseph	N.Y.	Duffy, Michael Mann	Va.
B.S. 1951, Syracuse University		A.B. 1953, Dartmouth College	D.C.
Doyle, Herbert Aloysius, Jr.	R.I.	Duffy, William LeClair	Va.
Doyle, Lucile Edna	D.C.	duFief, Margaret Mars	D.C.
A.B. 1947, Washburn University		Duggan, Edward Vincent	Va.
Doyle, Mallon Eugene	Va.	Duggin, Kenneth Dale	
A.B. 1949, The George Washington University		Duggins, Virginia Anne	
Doyle, Richard Robert, Jr.	Va.	A.B. 1942, Sweet Briar College	
Doyle, Vincent Joseph	D.C.	A.M. 1951, The George Washington University	Md.
Doyle, William Andrew	Va.	Duke, Florence L.	D.C.
B.S. 1951, Georgetown University		A.B. 1950, University of Maryland	Md.
Draffen, Edythe	Mo.	Duke, Henry John	Ohio
Draetta, Rita M.	D.C.	Duke, Mary Joan	D.C.
Drake, Dorothy Georgette	Md.	Dulle, Robert Lamarr	D.C.
Drake, Hugh Hess	Colo.	Dumontier, Marie Louise	
B.S. in E.E. 1950, University of Colorado		Dun, Catherine Whipple	D.C.
Drake, John G.	Va.	A.B. 1915, Radcliffe College	Va.
B.S. 1950, American University		Dunaway, Edward George	Va.
Drake, Norman Martin	Md.	Duncan, Carolyn Agnes	Va.
Drake, Sherwood Albert	Mo.	Duncan, Edward Caton, Jr.	
Draper, Elizabeth Kohl	D.C.	Duncan, Esther Jane	
A.B. in Ed. 1954, A.M. in Ed. 1941, The George Washington University		Duncan, Francis	D.C.
Draper, James Kenneth	D.C.	A.B. 1943, Ohio Wesleyan University	
Draper, Richard Gordon	Va.	A.M. 1947, University of Chicago	D.C.
Driver, John Roger	Va.	Duncan, Ida Carleen	Md.
B.J.E. 1948, Ohio State University		B.S. 1944, Concord College	
Dressler, Joseph Anthony	Md.	Duncan, John Edward, Jr.	
Drew, Joan Hunter	D.C.	Duncan, John Orsly	Ohio
Drew, Judith Mary	D.C.	A.B. 1949, The George Washington University	
Drewell, William John	N.Y.	Dunfee, Bernadine Langdon	Va.
A.B. 1950, Manhattan College		B.S. in Ed. 1949, Wilmington College	Pa.
Droll, Henry Andrew	N.Y.	Dunham, Franklin George	
B.S. 1952, The George Washington University		Dunkle, Alice Elizabeth	Md.
Droll, Marian Clarke	Va.	A.B. 1949, Wilson College, Pa.	
Droll, Philip Martin	Va.	Dunlap, Patricia Louise	
Drogin, Herbert	D.C.	Dunlap, Paul Ralph	
B.E.E. 1950, Cooper Union		A.B. 1948, Ed.M. 1950, Pennsylvania State College	

Dunn, Alanson Burton A.B. 1938, University of Texas	Texas	Eanet, Lawrence Joseph A.B. 1952, Harvard University	D.C.
Dunn, Carol Patricia	Va.	Earle, Harold Fred	Md.
Dunn, Eugene Louille	Iowa	B.S. 1951, University of Maryland	D.C.
Dunn, Elwood McDonald, Jr. B.S. 1941, University of North Carolina	N.C.	Early, Douglas McCord	D.C.
Dunn, Florence Wright	D.C.	Early, William Norman A.B. 1933, The George Washington University	D.C.
Dunn, Howard A.B. 1936, College of the City of New York	Md.	Earnshaw, Doris Mae	Md.
A.M. 1940, Columbia University		Earnshaw, Katherine Love A.B. 1952, Mary Washington College	Md.
Dunn, John Thornton	Va.	East, Adrienne Clare	Va.
Dunn, William Francis	D.C.	Eastman, Frederick Philip A.B. 1947, University of Rochester	Md.
Dunne, William Charles	D.C.	Eastman, Robert Emerson B.S. 1946, U.S. Naval Academy	Calif.
Dunington, Edwin Adams, Jr. A.B. 1950, The George Washington University	Md.	Easton, Carl Wilbur	Va.
Dunlap, Elaine Marilyn B.S. 1943, Southwest Missouri State College	Mo.	Eastridge, Ben Hinder, Jr. A.B. 1952, Emory and Henry College	Va.
Dupont, Eileen Margaret		Eberly, Joyce Eileen	Nebr.
Dutton, Grace Stuck	D.C.	Eberle, Earl Donald	Pa.
Dutton, Harold James A.B. 1950, The George Washington University	D.C.	Ebert, Eugene A.B. 1952, The George Washington University	D.C.
Dutton, Katharine R. H. A.B. 1941, Radcliffe College	Va.	Eberts, Joseph Warren B.S. 1950, Pennsylvania State Teachers College, Kutztown	Pa.
Dutton, Calvin Thornton, Jr.	D.C.	Eble, Frank Adolph B.Arch Eng. 1950, Catholic University of America	D.C.
Dutton, John F. B.S. 1952, University of Maryland	D.C.	Eblen, Mary Jane B.S. 1952, University of Michigan	Pa.
Dutley, Raymond Eugene	Md.	Eby, Amy Bowen A.B. 1949, Shepherd College	Md.
Dutrough, Evelyn Grace A.B. in Ed. 1951, The George Washington University	Va.	Eccles, Lydia Lawrence	D.C.
Dutton, Barbara Jean	D.C.	Eccles, Dudley Newman	Ariz.
Durr, Lawrence Ervin	N.H.	Echaves, Selma Fernanda	D.C.
Dutton, Janet Kay A.B. 1948, University of Missouri	Md.	Echevarry, Miguel de A.B. 1952, The George Washington University	D.C.
Dutton, Virginia Lorraine	Va.	Eckensberger, William Henry, Jr. A.B. 1951, Montclair College	Pa.
Dutton, Robert Harvey B.S. 1940, The George Washington University	D.C.	Economides, Alexandria Mattheos	Greece
Duvall, Allen Joseph	Ill.	Economides, Henry Harry	D.C.
Duvall, Anna Sue		Economou, Zmaro	Pa.
Duvall, Donald Knox A.B. 1949, Yale University	Va.	Edeles, Sister Mary Joseph	D.C.
Duvall, John Hart L.L.B. 1953, University of Virginia	D.C.	Edelstein, Barbara Harriet	D.C.
Dwyer, Nancy Ellison	D.C.	Edelstein, Theodore Edward A.B. 1952, The George Washington University	D.C.
Dyck, Alfred Charles	D.C.	Eden, John A.B. 1951, New York University	N.Y.
Dyck, John William A.B. 1951, Catholic University of America	D.C.	Edema, Vello	Md.
Dye, Lucy Cornelius		Edgumbe, Nancy Jane	Pa.
Dyer, Richard Hutchins A.B. 1954, Yale University	D.C.	Edgren, Edson Jo	Md.
Dyer, Robert Francis A.B. 1951, University of Michigan	D.C.	Edinger, Ralph Joseph	D.C.
Dyari, Richard Allan		Edlin, Irwin Paul	D.C.
Dyland, Robert Carroll	Maine	Edmark, Inez Helen	D.C.
Dyson, Henry Harrison, Jr.	Md.	Edmonds, Sadie Ellen	Va.
	Va.	Edmondson, Ruby Mae	Va.
		Edmonds, John Venable A.B. 1949, Centre College of Kentucky	W.Va.
Eacho, Robert Lee A.B. 1951, University of Virginia	D.C.	Ednie, Robert Lewis B.S. Peer Eng. 1942, B.S. Mech. Eng. 1947, M.S. 1949, Louisiana State University	Va.
Eade, Kate Turner		Edwall, Warren Emerson A.B. in Govt. 1949, The George Washington University	Ill.
Eagan, Charles Gary	Va.	Edwards, Barbara Ann	D.C.
Eaton, Helen Doris	D.C.	Edwards, Elaine Link	W.Va.
Eaton, Sherlon John	W.Va.	Edwards, Fred I.	Va.
Eames, Edward Ashley A.B. 1953, Amherst College	Md.	Edwards, Grant Campbell	D.C.
	Mass.		

Edwards, Marion William	Kans.	Ellenbogen, Fay	Pa.
A.B. 1930, The George Washington University		A.B. 1948, University of Pittsburgh	Va.
Edwards, Peggy LaFaye	Fla.	Eller, Gloria Jean	N.C.
Edwards, Rosaline Mary	Md.	Eller, Robert Whittington	N.C.
B.S. in Ed. 1934, A.M. 1935, Ph.D. 1932, Fordham University		B.S. 1951, Wilson Teachers College	
Edwards, Suzanne Elizabeth	Md.	Ellington, William Thomas	Pa.
Edwards, Wesley D.	Va.	A.B. 1952, Duke University	D.C.
Edwin, Gabriel	Md.	Elliott, Fredericka Kirk	Md.
B.S. 1949, M.S. 1951, The George Washington University		Elliott, Jerry Deon	Md.
Elfron, Reshen	D.C.	Elliott, Ioy	D.C.
J.D. 1936, University of Vyntantas the Great, Lithuania		Elliott, Mary Fern	
Egan, Edward Francis	D.C.	Elliott, William James	
B.S. 1952, Mount St. Mary's College		B.S. 1945, California Institute of Technology	
Egan, George William	D.C.	LL.B. 1951, University of San Francisco	Md.
Egbert, John Paul	Va.	Ellis, Carl Edison	Kent.
Egbert, William Richard	D.C.	Ellis, Clyde Taylor	Md.
B.S. 1952, Brigham Young University		Ellis, Davis Allen	D.C.
Egli, Ida Eileen	D.C.	Ellis, Doris Rosenberg	Fla.
A.B. 1951, State University of Iowa		Ellis, Edna Jane	La.
Eglinton, Arthur Richard	Ohio	Ellis, Frederick Wallace	Md.
B.Ch.E. 1953, University of Delaware		Ellis, George Joseph, Jr.	
Ehlert, Kathleen Lillard	Va.	A.B. 1953, Catholic University of America	N.Y.
A.B. in Ed. 1948, The George Washington University		Ellis, James Garfield, Jr.	Va.
Ehrenborg, Sarah Anne Beata	Sweden	Ellis, John Cole	Ga.
Ehrlich, Bernette	D.C.	A.B. 1949, Yale University	Va.
Ehrlich, Eugene	D.C.	Ellis, John Reavis	
A.B. 1951, New York University		Ellis, Julia Miller	D.C.
Eiben, Donald Thomas	Fla.	A.B. 1943, Davis and Elkins College	Pa.
A.B. 1950, University of Miami		Ellis, Marian Bissell	D.C.
Eisher, David Noel	N.Y.	Ellis, Mary Bedale	N.Y.
Eiser, Wilson Donald	Va.	Ellis, Raymond Joseph	N.Y.
Eisner, Albert	D.C.	Ellisworth, James Ethelmer	Md.
A.B. 1948, M.S. 1950, The George Washington University		Ellsworth, Patricia	
Eisenberg, Philip	D.C.	Ely, Patricia	
Eisenberg, Warren William	N.J.	A.B. 1949, College of Notre Dame of Maryland	
Eisenberger, Dorothy Evelyn	Ohio	A.M. 1951, The George Washington University	D.C.
Eisenberger, Charles Martin	N.Y.	Elphick, Edith	Ind.
B.S. 1941, Queens College		Elshawi, Nazar Nadeef	
Eisenhower, Mary Louise	Pa.	B.S. 1952, Michigan State College	N.J.
Eisner, Donald Clifford	D.C.	M.S. 1953, Georgetown University	Va.
Eisner, Richard Allen	Md.	Elso, Joan Marie	Va.
Eiswald, Robert B.	Mont.	Elson, Quin Samuel	Md.
B.S. 1951, Montana State College		Elstad, Victor Bernhard	W.Va.
Eklund, Ronald George	Va.	A.B. 1941, St. Olaf College	Va.
A.B. 1951, Delaware College		Elwyn, Mary Ball	D.C.
Elscholtz, Lillian Mabel	Pa.	Ely, Joseph Lee	Md.
Elman, Donald Owen	Md.	Ely, Marvin Thomas	Va.
Elman, Florence Ethel	D.C.	Embrey, Thomas Carl	
Elson, Barbara Jean	Va.	Emerson, Clingman Eugene	
Elder, Robert Lawry	Va.	Emerson, Harold Leonard	
Eller, Stanley Monroe	Wash.	A.B. 1953, The George Washington University	Va.
Eller, Vernon David	D.C.	Emerson, Margaret Wagner	Md.
Ellis, Francis Alphonse	Monn.	Emerson, Ralph Waldo	Va.
Ellis, Stephen Stuart	N.Y.	Emery, Robert Elliot	D.C.
B.S. 1941, Union College and University		Emmerson, Anne Cocke	N.Y.
Ellis, George, Jr.	W.Va.	Emmerson, Mary Elizabeth	W.Va.
A.B. 1950, Western Reserve University		Emmett, William Joseph	D.C.
Elison, Israel Jack	Ill.	Emmons, Paul M.	D.C.
B.S. 1947, College of the City of New York		Emory, George Meade	Pa.
A.M. 1946, The George Washington University		Emory, Jonis Ann	
Ellen, Evelyn	D.C.	Emory, Orville James, Jr.	
Ellen, Natter Jane	W.Va.	Endreikis, Irene Josephine	D.C.
Ellis, George Henry	D.C.	B.A. 1950, University of Minnesota	
Elko, Helen	Pa.	Endres, Richard John	D.C.
		A.B. 1950, University of Washington	
		Engel, Mary Louise	

Engelhardt, Doris J. A.B. 1945, Muskingum College	Ohio	Estes, Robert Calvert	D.C.
Engelman, Diane Carole	D.C.	Etchella, Allison Lawton	Md.
Engelsberg, Connie Doris A.B. 1949, Pennsylvania State College	N.J.	Ethridge, Mary Elizabeth	Texas
England, James William	Va.	Etzler, Frank Hamilton	Va.
Englund, Rebekah Ruth	D.C.	Eubank, Dorothy Ozell	N.C.
Ennis, Edmon Grove Jr. B.S. 1943, Pennsylvania State Teachers College, Millersville	Va.	Eubank, Nellie Joyce A.B. 1946, University of Richmond	Va.
Enright, Helen Wynn	Va.	Eubank, Thomas Lee	W. Va.
Ensign, Eric Rudolph	Va.	Eunich, Margaret Carey	Fla.
Eno, Fanny B.S. 1943, Wilson Teachers College	D.C.	Eugent, Syllman Isaac B.S. 1950, University of Maryland	Md.
Enos, Lyle Edwin	D.C.	Evans, Peter G.	Md.
Enos, Thomas Michael	W. Va.	Evans, Barbara Maryjane	D.C.
Enright, Clifford Alan	Va.	Evans, Barbara Rayen	Va.
Enriquez, Jean Gordon B.S. in H.E. 1949, The George Washington University	Va.	Evans, Beatrice A.B. 1942, College of Wooster	Mass.
Enriquez, S. Nadine B.S. 1943, Kansas State College	Kans.	Evans, David Robert B.S. 1941, The George Washington University	D.C.
Ensign, James Charles	D.C.	Evans, Harley Parker, Jr.	D.C.
Epstein, Bart Jacob B.S. 1948, Cornell University	Mass.	Evans, James Paul	Va.
Epstein, Barton Seymour	D.C.	Evans, John Burnison	Va.
Epstein, Howard Lee	D.C.	Evans, John Jacob A.B. 1947, Lehigh University	Pa.
Epp, John George	Pa.	M.S. 1951, The George Washington University	
Estes, Randall George B.M.E. 1950, Purdue University	Va.	Evans, John William	N.J.
Estlin, John E. A.B. 1941, Fairmont State College	Ohio	Evans, Marlene Anne	D.C.
Estline, Charles Edward	Md.	Evans, Mary Elizabeth A.B. 1941, Mary Baldwin College	D.C.
Eston, Albert James	D.C.	A.M. 1951, The George Washington University	
Eston, Richard David	Iowa	Evans, Patricia Shreve	D.C.
Eston, John Williamson	N.D.	Evans, Robert Edwards	Va.
Ethenberg, Richard Vernon B.S. 1940, University of Illinois	Va.	Evans, Roy Lester B.S. 1949, Indiana Central College	Md.
Etling, David Payson A.B. 1947, University of Maryland	D.C.	Evans, Vella T.	D.C.
Etting, Betty Ruth A.P. 1942, American University	D.C.	Evans, William Benjamin B.S. 1940, University of Maryland	D.C.
Euba, Frederick Edward A.B. 1949, University of Pittsburgh	D.C.	Evans, William George	D.C.
Eubank, Rosina	D.C.	Evans, William Jacob	D.C.
Eubank, Albert Frederick A.B. 1949, A.M. 1950, The George Washington University	D.C.	Evensen, Ronald Norman B.A. Eng. 1949, University of Minnesota	Va.
Euchmeyer, Barbara Jean	Va.	Everett, Annie Leora	D.C.
Euchmeyer, Walter Norman	Va.	Everett, Clayford Thomas A.B. 1942, West Virginia University	Va.
Eukenes, Michael	Mexico	Everett, Franklin Milton B.S. 1950, The George Washington University	D.C.
Eukenes, Solomon	Finland	Everett, Horace Jud	Ark.
Euphe, Felipe Angelus	D.C.	Everett, Randall Wade III	Va.
Euphonia, Mary Oswald	D.C.	Everhard, Conrad H.	Va.
Euphonia, Norberto E. Licence in Philosophy 1949, University of Geneva	Ecuador	Everhart, William C. A.B. 1941, Gettysburg College	Pa.
Euphonia, Norberto E. A.M. 1952, University of Maryland		A.M. 1947, Columbia University	
Euphonia, Norberto E. L.L.B. 1940, Rutgers University	Pa.	A.M. 1940, Pennsylvania State College	
Euten, Harold B.M.E. 1941, The George Washington University	Md.	Ewan, Virde Setty	Md.
Euter, Lewis I. A.B. 1940, San Diego State College	Calif.	Ewell, John Francis B.S. C.E. 1946, Virginia Military Institute	Va.
Euter, Robert Eileen A.B. 1950, Macalester College	Minn.	Ewing, Mary Kennedy	Va.
A.M. 1951, The George Washington University		Ewy, Constance Magdalene A.B. 1941, A.M. 1949, The George Washington University	Minn.
Ester, Milbrey Lee	D.C.	Eyster, William Joseph	D.C.
		Eynon, Roberta Carter	Md.
		Eynon, William John	Va.

F			
Fabela, Hortensia P. Soto	N. M.	Farrell, Mary Theresa	Conn.
Fabela, Gabriel F.	Philippines	B.S.S. 1951, Bryant College	Mass.
A.B., B.S.Ed. 1920, A.M. 1931,		Farrell, Rollo Lester, Jr.	Ariz.
University of the Philippines		Farrington, Charles Jerome, Jr.	D.C.
M.L.B. 1934, University of Manila		A.B. 1951, University of Arizona	Calif.
Faber, Florence Barbara	Fla.	Farris, Ella Lou	Va.
Fabrizio, Eugene Bonard	Pa.	Farris, Frederick Arthur	
B.S. 1950, University of Pittsburgh		B.S. 1946, University of Minnesota	
Fabry, Elizabeth Helen	D.C.	Farris, Frederick Joseph	
Fadden, Ruth C.	Md.	A.B. 1950, The George Washington	Va.
Fagan, William Stuart	Va.	University	
B.S. 1946, University of Oregon		Farrow, Richard Paul	
M.B.A. 1948, Stanford University		A.B. 1950, Catholic University of	D.C.
Fahay, James Daniel	Md.	America	D.C.
Fahay, John Leslie	D.C.	Farsetti, Michael	D.C.
M.S. 1949, Wayne University		Farwell, Mary E.	Pa.
M.D. 1941, Harvard University		Fatiadi, Alexander Johann	D.C.
Fahy, George Herbert	D.C.	Fatora, Jack Gerald	Pa.
Fahy, John Bernard	Md.	Faulkner, Josephine Brock	D.C.
B.S. 1952, University of Maryland		Faussey, Robert Theodore	D.C.
Fair, Martha Christine	D.C.	Faust, Wilda Freebern	
Fairbanks, Bertha Amy	Va.	A.B. 1929, Iowa State Teachers College	Pa.
Faison, Edmund Winston Jordan	Va.	A.M. 1945, University of Florida	Pa.
A.B. 1948, A.M. 1950, The George		Favarella, Samuel Peter	D.C.
Washington University		Favo, Frederick R.	Va.
Falk, Erling Hultgreen	D.C.	Fawal, Isa Aziz	
Falcone, Joseph	Va.	Fawcett, Melvin Dewey	Va.
Falk, Donald Burton	Va.	A.B. 1951, Shepherd College	
B.S. 1952, University of Illinois		Fawkes, Bernard Thomas	
Falk, Florence	Va.	A.B. 1949, Colgate University	Pa.
A.B. in Govt. 1948, The George		A.M. 1952, Columbia University	Md.
Washington University		Fay, Eleanor Theresa	D.C.
Fallon, Bernard Vaughan	Mass.	Fay, John Francis	
Fallon, Edward Joseph	Va.	Fay, Patricia Allen	
A.B. 1950, University of Rochester		Fay, Richard Joseph	Va.
Fallon, Eugene Brady	N.Y.	A.B. 1951, College of the Holy Cross	Md.
B.S. 1944, U.S. Naval Academy		Feagans, Gilbert Graham	
Fallon, George Francis, Jr.	D.C.	Feather, Ben Wayne	Pa.
Fallon, James Whelan	D.C.	A.B. 1952, Duke University	Puerto Rico
A.B. 1947, A.M. 1949, Tufts College		Febbo, Joan Mary	
Fallon, Lucille Teresa	Va.	Febles, Francisco, Jr.	S.C.
B.S. 1947, New York University		B.S. 1950, The George Washington	
Falla, Rosalie	Va.	University	
Famous, Priscilla	D.C.	Fedder, William Jerry	
Fanstaff, Arnold Joel	D.C.	A.B. 1950, LL.B. 1952, University of	Va.
Fanway, Allan Gordon	Md.	South Carolina	N.Y.
B.S. 1950, Davidson College		Fedel, K. June	
Fanning, Josephine P.	Md.	Fedele, Frank	
Farah, Woodford Todd	D.C.	A.B. 1939, College of the City of New	
Faria, Samuel Limal	Lebanon	York	
A.B. 1951, West Virginia University		I.L.B. 1942, Fordham University	D.C.
Farnham, Andrew Reed	D.C.	I.L.M. 1951, New York University	
A.B. 1950, University of Maryland		Feder, David Ryd	D.C.
Farr, Beas	Md.	B.Ch.E. 1948, University of Maryland	D.C.
A.B. 1926, Baylor University		Feder, Joan Ruth	D.C.
A.M. 1939, Northwestern University		Federico, Joan Faye	D.C.
Farkas, Jess Robert	Conn.	Federico, Patricia Morse	
Farley, Mary Beatrice	Md.	Fedorko, Joseph	Va.
Farley, Thomas Albert	D.C.	B.S. 1952, University of Maryland	D.C.
Farmer, Robert Singleton	Va.	Fedore, Victor	N.M.
Farnes, Wallace Dawson	Md.	Fer, Marie Louise	Maine
A.B. 1951, Idaho State College		Fer, Norman Francis	
Farnsworth, William Yates	Calif.	A.B. 1952, Casleton College	Md.
A.B. 1951, Brigham Young University		Feeney, Edward Jude	
Faro, Ruth Marian	Md.	A.B. 1951, St. Anselm's College	Md.
Farr, Robert Thomas	Va.	Feeney, Jean Timothy	Va.
Farrar, Mary Elizabeth	N.J.	B.S. 1951, Georgetown University	D.C.
Farrell, Albert Bernard	D.C.	Fegan, John Robert	N.J.
A.B. 1937, University of Maryland		Feld, Sam Cleave, Jr.	Md.
Farrell, Eileen Frances	Ill.	Fenster, Margaret Marie	N.J.
A.B. 1941, College of St. Francis		Festel, Morris	D.C.
		Feltner, Stanford	
		Feltman, Edmund Henry	

Students Registered

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Feldman, Sheldon	D.C.	Field, James H.	Md.
Feltman, Sylvia Dollie	D.C.	Field, Lillian Lee	D.C.
Feltman, Alissa Elvira	D.C.	Field, Thomas Dewey, Jr.	Va.
Feltman, Keith Harrison	Va.	Fielder, Ann Regis	D.C.
Feltman, David Brown	Va.	A.B. 1947, Antioch College	
A.B. 1952, The George Washington University		Fielder, Margaret Ruth	D.C.
Feltman, Robert Michael	Va.	Fields, Maryanna	Va.
Feltman, Dorothy K.	Ind.	Fields, Roland Carmel	Va.
Feltman, Nathan Lewis	N.Y.	A.B. 1950, The George Washington University	
Feltman, Donald J.	Pa.	Fields, Theodore Martin	D.C.
A.B. 1952, University of Pennsylvania		Filardo, Savio Carl	Md.
Feltman, John	N.J.	Filipek, Joyce Scott	Va.
B.S. 1952, Rutgers University		A.B. 1948, University of North Carolina	
Feltman, Harvey Saul	D.C.	Filipovic, Milenko	D.C.
Feltman, Ann Maxamer	D.C.	Filipowicz, Casimir Anthony	N.Y.
Feltman, Donald Roberts	D.C.	Filipski, Ruth Isabel	Md.
Feltman, Elizabeth Faulkner	D.C.	Finberg, Joseph	Va.
Feltman, Frank A.	D.C.	Finch, James Derwood	Tenn.
A.B. 1951, Shepherd College		Finch, John Robert	Va.
Feltman, Paul Thomas	Md.	Finch, Walter Gihrist	Md.
A.B. 1950, University of Virginia	Va.	B.E. 1940, M.E. 1950, Johns Hopkins University	
Feltman, Eleanor Ann	Pa.	LL.B. 1948, M.B.A. 1949, Temple University	
Feltman, Harmon Benjamin	Md.	LL.M. 1949, The George Washington University	
A.B. 1950, Lafayette College		Fine, Edward Earl, Jr.	Md.
Feltman, Edward George	N.J.	B.S. 1945, American University	
A.B. in Govt. 1951, The George Washington University		Fink, Donald	N.Y.
Feltman, Stuart B.	N.Y.	Fink, James Albert, Jr.	Va.
A.B. 1951, Syracuse University		Fink, Jules Verne	D.C.
Feltman, Glenn Walker	Md.	A.B. 1949, LL.B. 1952, The George Washington University	
A.B. 1951, M.B.A. 1951, Cornell University		Finkel, Eugene Jay	Pa.
Feltman, Jane Morton	Ala.	A.B. 1952, Swarthmore College	
Feltman, James Hilbun	Va.	Finkel, Mitchell Wolf	Pa.
Feltman, Paul	Mass.	Finlay, Helen King	Va.
Feltman, Robert Wallace	N.H.	A.B. in Ed. 1948, Huntington College	
Feltman, Anna Oswald	Puerto Rico	A.M. in Ed. 1948, The George Washington University	
Feltman, Sylvia Montalvan	D.C.	Finn, John Louis	Pa.
Feltman, Elizabeth, Martha Paula	D.C.	B.S. 1945, LL.B. 1949, Georgetown University	
Feltman, Harry Robert	D.C.	Finn, John William	Md.
Feltman, Richard G.	Ohio	Finn, Grace Werring	Va.
Feltman, Anna Elizabeth	La.	A.B. 1941, University of Oslo	
Feltman, Barbara Ann	R.I.	A.M. 1947, Bryn Mawr College	
A.B. 1951, The George Washington University		A.M. 1948, Johns Hopkins University	
Feltman, Robert Turrell	D.C.	Finnell, Albert Thomas	Va.
Feltman, Joseph Conelia	Md.	Finneman, Michael James	N.Y.
A.B. 1948, LL.B. 1950, The George Washington University		Finnex, Barbara Jane	Va.
Feltman, William Perenne	R.I.	Finnex, Philip A.	Md.
Feltman, Thomas	D.C.	Finnex, Robert Lewis	Md.
Md. 1951, Marquette University		B.S. 1952, Washburn College	
Feltman, Richard Allen	Mich.	Finnern, William Joseph	D.C.
Feltman, Donald Leighton	Va.	B.S. 1951, Louisiana State University	
Feltman, James Joseph	Va.	Finstad, Alice Olga	D.C.
B.S. and P.E. 1951, The George Washington University	N.J.	A.B. 1947, Montana State University	
Feltman, Leona Cook	N.J.	A.B. in Govt. 1951, The George Washington University	
A.B. 1951, West Virginia University	Va.	Finta, Quon	Va.
Feltman, Donald Calvin	W.Va.	Fioramonti, Mary Clair	D.C.
B.S. in M.E. 1949, University of Notre Dame		B.S. 1949, The George Washington University	
Feltman, Alexander Raymond	D.C.	Fiorillo, Peggy Nell	D.C.
B.Aero.E. 1952, University of Michigan	Ill.	Fiorio, Richard Arthur	Md.
	N.Y.	Fior, Gertrude Margaret	D.C.
		Fior, Stanley Alfred	D.C.
		A.B. 1949, University of Miami	
		Fischer, Herbert S.	N.Y.
		B.E. 1949, University of Missouri	

Fischer, Martin Nathaniel	D.C.	Flannigan, Thomas John, Jr.	D.C.
Fischer, Sue Lain	Va.	Flather, Alfred Chester, Jr.	D.C.
Fisette, Charles Barry William, Jr.	Calif.	B.S. 1952, Wilson Teachers College	Va.
Fish, James Monroe	D.C.	Fleener, Peggy Ann	Tenn.
B.S. 1948, Richmond Professional Institute		Fleming, Anna Page	D.C.
Fish, Janice Page	Md.	Fleming, Edward Stitt	
A.B. 1949, University of Utah		A.B. 1951, University of North Carolina	Va.
A.M. 1952, University of Pennsylvania		A.M. 1952, University of Texas	Md.
Fish, Jerome Sullivan	Ky.	Fleming, Jack Sterling	
A.B. 1951, Berea College		Fleming, Maurice Carl	
Fishbein, Lawrence	Md.	A.B. 1944, Western Maryland College	
B.S. 1948, Brooklyn College		A.M. 1948, Ed.D. 1952, Columbia University	
Fishburne, John Ingram	Va.	Ph.D. 1942, New York University	D.C.
A.B. 1934, A.M. 1938, University of South Carolina		Fleming, Nancy	Va.
Fisher, Audrey McMurray	Va.	Fletcher, Elsie Tompkins	D.C.
A.B. 1951, David Lipscomb College		Fletcher, John George	D.C.
Fisher, Bobby Joe	Texas	Fleury, Alice Fenwick	Va.
Fisher, Carl William	Ohio	Ed.B. 1947, Wilson Teachers College	Mass.
Fisher, Donald Vincent	Md.	Fleury, George Edward	W.Va.
Fisher, Ella Jay	Calif.	Fleury, Leonie Anne	
B.S. 1949, U.S. Naval Academy		Flick, Donald Franklin	
Fisher, Fred Wendelson	Va.	A.B., M.S. 1947, West Virginia University	Va.
Fisher, Henry Estance	La.	Flickinger, Ida May	
A.B. in Govt. 1952, The George Washington University		A.B. 1940, Oberlin College	Ohio
Fisher, Jane Elizabeth	D.C.	A.M. 1941, Columbia University	
Fisher, Patricia Ann	Va.	Flickinger, Ted Lawrence	D.C.
Fisher, Richard Sullivan	Md.	B.S. 1950, Western Reserve University	
Fisher, Robert Edwin	D.C.	Flieger, Howard Wentworth, Jr.	Md.
Fisher, Samuel Lester, Jr.	D.C.	B.S. 1952, The George Washington University	Va.
Fisher, Uval Shannon	Mich.	Flieger, Kenneth Hugh	
Fisher, William Leo		Flint, Martha Kathryn	Va.
B.Ch.E. 1951, University of Detroit		A.B. in Govt. 1949, The George Washington University	
Fishman, Alan Donald	D.C.	Fling, Nancy Taylor	W.Va.
Fishman, Leo	W.Va.	A.B. 1951, University of Richmond	Conn.
A.B. 1947, A.M. 1948, Ph.D. 1945, New York University		Flinn, Samuel Roy	
Fitch, Harry John	Md.	Flint, Alice Mary	D.C.
B.S. 1951, University of Maryland		Ed.B. 1947, Fordham University	
Fitch, Mary Beth	Okla.	Flint, Helen Marie	
Fittin, Harvey Nelson, Jr.	Va.	A.B. 1941, Mt. Holyoke College	Calif.
A.B. 1942, The George Washington University		A.M. 1945, New York University	
Fitts, Nathan Cheney	Mass.	Flint, Mitchell Lewis	N.J.
A.B. 1949, Amherst College		B.S. 1948, University of California	
L.L.B. 1948, Harvard University		Flint, Peter Boone	Va.
Fitzgerald, David Raymond	Va.	A.B. 1950, Haverford College	
A.B. 1949, Boston College		Flippo, Bettye Paxton	Pa.
Fitzgerald, Ouis	Pa.	B.S. 1950, A.M. 1951, University of Virginia	
Fitzhugh, Howard Lee, Jr.	Md.	Floeken, Paul Jay	Md.
Fitzmaurice, Frank Patrick	D.C.	A.B. 1951, Lebanon Valley College	Kent.
Fitzpatrick, Edward James	D.C.	Flood, John Maynard	D.C.
Fitzpatrick, Eugene Joseph	Md.	A.B. 1951, Gettysburg College	Md.
B.S. 1950, Georgetown University		Flores, Erma	Va.
Fitzpatrick, George Raddell	Md.	Flory, Jane Anne	
A.B. in Govt. 1951, The George Washington University		Flood, Harold Leopold	
Fitzwater, Ivan Walton	Md.	Floyd, John Philip	D.C.
Fix, Charles Edward	Va.	A.B. 1951, The George Washington University	Va.
Flakne, Irene Hodges	D.C.	Floyd, Karin Maria	D.C.
B.Ed. 1949, University of Alaska		Floyd, Sara J. S.	Md.
Flaknowicz, Karol	Va.	B.S. 1950, Florida State University	
A.B. in Govt. 1949, The George Washington University		Floyd, Shirley Margaret	Conn.
Flanagan, Francis James	D.C.	Flynn, George Joseph, Jr.	Calif.
B.Ch.E. 1948, Catholic University of America		M.E. 1949, University of Minnesota	D.C.
Flanagan, Thomas Gilbert, Jr.	D.C.	Flynn, Jean Teresa	Md.
Flannery, William Edward	Va.	Flynn, John Edward	
Flannery, Joseph Patrick	D.C.	Flynn, Joseph Earl	
		Flynn, Lucine Hanz	

Flynn, Paul J. B.S. 1949, University of Scranton	D.C.	Foster, George Samuel B.S. 1941, University of Tennessee	Tenn.
Flynn, Rima Helen	D.C.	A.M. in Ed. 1948, The George Washington University	
Foster, Richard William B.S. 1949, University of Maryland	Ohio	Foster, Herman B.C.E. 1950, College of the City of New York	N.Y.
Foster, Steve Evangelos	Md.	Foster, James Buck B.S. 1952, Colorado Agricultural and Mechanical College	Va.
Foster, Judy Marilyn	N.Y.	Foster, Jerry Lewis Foster, M. Loraine B.S. 1951, Madison College	Ala. Va.
Foster, Raymond	D.C.	Foster, Marvin F. Foster, Matthew Francis Foster, Maxwell Kenyon	Md. D.C. Mo.
Foster, Mary Agnes	Pa.	Foster, Nancy Helen Foster, Neale Strong Foster, Paul Allen	Va. Fla. D.C.
Foster, Penny Jean B.S. 1952, Diesel Institute of Technology	Va.	Foster, Robert Middleton A.B. 1934, University of Michigan	Va.
Fogelman, Ralph William D.M. 1947, Kansas State College	D.C.	Foster, Thomas Russell B.M.E. 1947, Georgia Institute of Technology	Va.
Foldenauer, Robert Carl A.B. in Govt. 1951, The George Washington University	Md.	Fouche, James Edwin Foust, Betty Jean A.B. 1951, The George Washington University	Va. D.C.
Foley, Basilcroft Theodore, Jr. B.S. 1951, Mary Washington College	Va.	Fowler, Alta Frances B.S. 1946, Northwestern University	Va.
Foley, Joan Dolores	Mass.	A.M. 1950, Fletcher School of Law and Diplomacy	
Foley, Joseph Brendan A.B. 1944, Brown University	Va.	Fox, Barbara Anne Fox, Barbara Jean Fox, Edward Jackson, Jr. A.B. 1950, A.M. 1952, Cornell University	Va. Wis. Md.
Foley, Marie Gerber B.S. 1949, Madison College	Pa.	Fox, John W. Fox, Paul Wayne Fox, William Lloyd A.B. 1941, A.M. 1945, Western Reserve University	Va. D.C. Md.
Foley, Michael David	Va.	Fox, William Raymond Foy, Alice Bernard A.B. 1951, University of Maryland	D.C. Md.
Folsenad, Robert Twar A.B. 1947, University of California at Los Angeles	Fla.	Fox, Anne Velma Fox, Alberto dos Santos A.B. 1944, University of Brazil A.M. 1947, University of Minnesota	Texas Md.
Follen, Audrey Carol A.B. 1947, Yale University	D.C.	Frame, Clyde Douglas A.B. 1950, Washington Missionary College	Md.
Follen, John Walker	Md.	Frank, George Conant B.S. 1949, University of California	Oreg.
Folte, Kenneth Henke	Va.	Frank, William M. Cafferty Freese, Barbara Lee Freese, Gloria Herbert	Va. Md. D.C.
Fong, James	Ohio	Frank, Arnold Roy A.B. 1927, A.M. 1928, Johns Hopkins University	D.C.
Fonnan, Robert Richard B.S. 1935, U.S. Naval Academy	D.C.	Frank, Maryada A.B. 1949, American University	D.C.
Fong, Patricia Mae B.S. 1951, U.S. Merchant Marine Academy	Va.	Frank, Rose M. Chlene Frank, Stuart Hall Frank, John Henry A.B. 1952, St. Johns College, Md.	Wis. D.C. Md.
Forbes, Charles Sidney B.S. 1947, M.S. 1949, Kansas State Teachers College	Ga.	Franklin, Alfred Carl A.B. 1949, University of Virginia	Ohio
Forbes, Merwin Bishop B.E. 1942, Norwich University	N.Y.	Franklin, Beatrice Browne B.S. 1943, Mary Washington College	Va.
Forbes, William Joseph B.S. 1952, College of the City of New York	Md.	Franklin, Daniel Tobias	D.C.
Forcum, James Evans A.B. 1950, The George Washington University	D.C.		
Ford, Dolores Jane	Md.		
Ford, David S.	D.C.		
Ford, Lora E.	Md.		
Ford, Thomas Richard A.B. 1951, University of Pennsylvania	D.C.		
Foreman, Joan Maxine	D.C.		
Forester, Joseph Elwood B.S. 1952, University of Maryland	D.C.		
Forester, Hummer	D.C.		
Forester, Carl Raymond	D.C.		
Forester, Marilyn Ann	D.C.		
Forester, Randolph	D.C.		
Forester, Stanley Albert	D.C.		
Forester, Eugene Eugene	D.C.		
Forester, Russell Thomas	D.C.		
Forester, Alice	D.C.		
Forester, Francis Paul	D.C.		
Forester, Milton Hal	Tenn.		
Foss, Herbert Thomas	Va.		
	Ill.		

Franklin, Edwin Abbott, Jr.	D.C.	Freyeisen, Rudolf Charles	Md.
Franklin, Philip Earle	D.C.	A.B. 1949, University of Maryland	D.C.
A.B. in Govt. 1949, The George Washington University		Frick, Helen Marie	Va.
Franklin, Rufus Masterson	R.I.	Frick, James Frederick	Va.
B.C.E. 1947, Massachusetts Institute of Technology		Fricke, George Leonard	Iowa
Franks, Georgia	D.C.	Fricke, Gertrude Adela	
Franssen, Gertie	The Netherlands	A.B. in Ed. 1943, The George Washington University	Va.
Franz, John Henry	Ill.	Frickel, Robert Scott	Ohio
B.S. 1948, University of Notre Dame		Frieden, Ralph Willford	Va.
LL.B. 1951, Georgetown University		Friedlander, Blaine Peyser	
Fraser, Donald Ross	Md.	A.B. 1948, University of Virginia	D.C.
Fraser, Donald Ross	Ohio	Friedlander, Florence H.	N.J.
B.S. 1952, University of Toledo		Friedman, Antoinette Black	
Frattantuono, Rose Muriel	Md.	B.S. 1943, Florida State University	N.Y.
Frattin, Sidney	N.Y.	Friedman, Eve R.	Va.
B.M.E. 1951, College of the City of New York		A.B. 1948, Brooklyn College	D.C.
Frawley, Margaret Lenora	D.C.	Friedman, Joel	
Frazier, Anna Kathryn	Va.	Friedman, Lewis Samuel	D.C.
A.B. 1977, Smith College		LL.B. 1906, LL.M. 1909, New York University	D.C.
Frazier, Forrest Livingston	Va.	Friedman, Reuben	
B.S. 1948, University of Virginia		B.Ch.E. 1949, College of the City of New York	D.C.
Frazier, Roy Donald	Texas	A.M. 1950, Columbia University	
B.Ch.E. 1950, University of Texas		Friedman, Sidney	
Freas, Howard Jacobs, Jr.	Md.	B.S. 1935, Long Island University	D.C.
A.B. 1950, A.M. 1951, Temple University		A.M. 1937, Columbia University	Va.
Frederick, Robert Martin	N.Y.	Friend, Beatrice Eleanor	Md.
Frederick, Walter William	Md.	Friend, Charles Ernest	Va.
Fredericks, Richard Paul	N.J.	Friend, James Lorrain	D.C.
B.S. 1951, Yale University		Friend, Robert Marion	D.C.
Freel, Richard Howard	D.C.	Frillman, Florian Edward	Md.
Freeman, Joyce Louise	D.C.	Frisa, Jean Marie	
Freelove, Arthur Walter	D.C.	Frisman, Fred	Iowa
Freeman, Abraham	D.C.	A.B. 1947, College of the City of New York	
Freeman, Andrew Rice	D.C.	Fritchen, Dean H.	D.C.
B.S., M.S. 1951, Catholic University of America		B.S. 1951, University of Iowa	Va.
Freeman, Clytus Allen, Jr.	Md.	Frich, Raymond John	
Freeman, Escha Camillea	Ga.	A.B. 1951, Bucknell University	
A.B. 1928, Georgia State College for Women		Fritsche, Carl Craighead	Md.
M.S. in Ed. 1941, University of Georgia		B.S. 1953, Washington and Lee University	D.C.
Freeman, Jack Miller	N.C.	Fritz, Bernard James	D.C.
B.S. 1949, Florida Southern College		Fritzian, Cynthia Mary	D.C.
Freeman, Jo Fisher	Md.	Fritze, Edith A.	Va.
A.B. 1920, University of Arizona		Fritze, Marla Enita	Ner.
A.M. 1927, Harvard University		Frizzi, Tullius John	
Freeman, Mary Gray	D.C.	Froehlich, Frede Franklin	D.C.
Freeman, Naomi Rexelson	Conn.	B.S. 1945, U.S. Naval Academy	
Freeman, Patricia Bydon	D.C.	Frohman, Alice Patricia	D.C.
Freeman, Richard Alan	Ill.	A.B. 1952, Wellesley College	N.Y.
A.B. 1949, University of Chicago		Frood, Warren William	
A.B. in Govt. 1952, The George Washington University		Froshier, Seymour	N.J.
Freeman, Rowland Godfrey	Mass.	A.B. 1940, College of the City of New York	Mo.
M.B.A. 1951, Harvard University		Frushtick, Howard Eugene	
Freston, Harold Richard	Md.	Fry, Kenneth Richard	
French, Dorothy E.	D.C.	B.S. in Ed. 1949, Northwest Missouri State College	N.Y.
B.S. 1947, University of Vermont		A.M. 1951, University of Nebraska	Va.
French, Ian MacLaren	D.C.	Fry, Roy Alexander	
A.B. 1952, West Virginia University	W.Va.	A.B. 1950, Iona College	
French, John Donald	D.C.	Fryberger, Elbert Lee	D.C.
B.S. 1948, M.S. 1952, Louisiana State University		B.S. 1953, U.S. Naval Academy	
French, Orville Sidney	Colo.	M.S. 1950, Harvard University	D.C.
French, Wilbur Lyle	D.C.	Frye, Margaret Fulton	
French, Carolyn Frances	N.Y.	A.B. 1947, Berea College	
Freyeisen, Dorothy Kathryn	Md.	Frye, Theodore Raymond	
		A.B. 1947, Oberlin College	

Students Registered

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Feyer, Ann Ione	Va.	Gaddis, Robert Eugene	Md.
Feyer, Freda Thurman	D.C.	Gadish, John Allen	Md.
Fuchs, Fred	N.Y.	Gargier, Francis Xavier	Md.
Fuchs, Henry	Va.	Gartner, Robert Montague	D.C.
Fuentes, Jose Eudoro	D.C.	Gage, Clarence Willard	D.C.
Fugate, Wilbur Lindsay	Va.	Gagnon, John Alfred	D.C.
A.B. 1934, Davidson College		B.S. 1932, Arnold College	
L.L.B. 1937, University of Virginia		Gahres, Edward Elias	Va.
L.M. 1951, The George Washington University		B.S. 1950, Rutgers University	
Fulmer, Neil Leonard	N.Y.	M.S. 1951, The George Washington University	
Fulmyer, Ethel	Wash.	Gallbreath, Mary Nell	Va.
Fulmer, Robert Wendell	Va.	Gane, Virginia Marie	Md.
Fulton, Nathaniel Simmons IV	D.C.	B.S. 1931, Chestnut Hill College	
Fulter, Ben Lee	D.C.	Ganey, Catherine Louise	Va.
Fulton, Constance Jane	Ill.	Gallbreath, William Bruce	Md.
B.S. 1939, Pacific University		B.S. 1951, Arizona State College, Tempe	
Fulter, Frank Gardner	N.C.	Gale, Dawn Judith	D.C.
B.S. 1939, Aurora College		Gale, Edward Anthony	N.J.
A.M. in Ed. 1947, The George Washington University		Gallagher, Harriet Blanch	D.C.
Foller, Mercedes Anne	Md.	Gallagher, Jack William	D.C.
A.B. 1941, Coe College		Gallagher, James Frederick	N.Y.
Foller, Rebecca Allen	N.Y.	Gallagher, Joan Marietta	Va.
A.B. 1949, Alfred University		Gallagher, Marjorie S.	Va.
Foller, Robert Lannes	D.C.	B.S. 1942, Sul Ross State Teachers College	
A.B. 1949, Bates College		Gallert, Hans Gerhard	Md.
A.M. 1941, Boston University		Gallier, Anna Finch	D.C.
Foller, Vernon, Jack	D.C.	Gallinek, Wilfred Ernest	N.Y.
B.S. 1951, University of Maryland		A.B. 1951, Syracuse University	
M.S. 1951, The George Washington University		Gallison, Glenn Daniel	Calif.
Foller, William Elliott	N.Y.	B.S. 1947, University of California	
B.S. 1944, U.S. Coast Guard Academy		Gallo, Joanne Lucretia	Mass.
J.D. 1954, The George Washington University		Galloway, Joan Stewart	N.Y.
Fullerton, Gay	Va.	A.B. 1952, Trinity College	
Fulton, Mary	Md.	Galloway, Richard Warren	D.C.
B.S. 1947, M.S. 1944, Columbia University		Gallup, Elizabeth Hale	D.C.
Funk, Richard Hodges	Kans.	A.B. 1953, The George Washington University	
Funk, Francis Joseph	D.C.	Galo, Lia	D.C.
A.B. 1937, Butler University		Galt, Lowell T.	Md.
A.M. 1938, University of Wisconsin		A.B. 1933, Coe College	
Funkhouser, Alice Reagan	Va.	Galvan, Jose Escobedo	D.C.
B.S. in Ed. 1946, Youngstown College		Galvin, William Michael	Md.
Funkhouser, Curtis Lee	Va.	Gamba, Sylvia Arbelaez	D.C.
Funeth, Denis Harold	D.C.	Gambino, Lawrence Angelo	N.J.
Furston, Edward Hogue	Kans.	A.B. 1952, Syracuse University	
Furber, Mildred	D.C.	Gamble, John Jasper	Md.
Furer, Ann Gloria	Mass.	Gamboa, Edwin Francis	D.C.
Furio, Richard Lawrence	D.C.	Gamboa, Lionel Kenneth	Philippines
Furlong, Patricia Lydon	D.C.	Ganes, Jeanne F.	D.C.
Ferr, Joan Slomp	D.C.	Gammeter, Gloria Grace	Ill.
Ferr, Wallace Johnson	Va.	Ganley, John Leo, Jr.	Va.
Furner, Ralph William	Va.	Gannon, Evelyn Mary	N.J.
Futrowsky, Selda	Va.	Gantz, Frank Elwin, Jr.	D.C.
Puterman, Sidney	D.C.	Gantz, Jack Morris	D.C.
B.S. 1950, M.S. 1953, The George Washington University	Md.	Gantz, Richard Farrand	D.C.
		Gantz, Shirley E.	Colo.
		A.B. 1942, University of Denver	
		Gapcynski, William George	N.Y.
		B.S. 1937, Union College	
		Garabo, Charles Paul	N.J.
		B.S. 1951, St. Peter's College	
		Garber, Marie Virginia	Va.
		B.S. 1945, Madison College	
		Garber, Raymond Sanford, Jr.	Va.
		Garbutt, Eugene James	D.C.
		B.S. 1960, University of Wisconsin	
		Garces, Rosario Haydee	D.C.
		Garcia, Antonio	Md.
		B.C.E. 1951, The George Washington University	
		Garcia, Emma	D.C.

G

Garbance, John Newton
 B.S. 1931, U.S. Naval Academy
 Gable, Josephine Caroline
 Gable, Robert Barth
 Gabriel, Anneliese
 Diploma Volkswirt 1939, University of Berlin
 Gadois, Alice Bernadette

Garcia, Esther	Puerto Rico	Gaskell, Montserrat Gatpandan	D.C.
Garcia, Robert Courtney	Fla.	B.S.C. 1951, University of Santo Tomas	D.C.
B.S. 1940, University of Florida		Gaskell, Richard Mullen	Fl.
Garcia, Wilma Forsell	D.C.	Gaspari, Richard Joseph	S.C.
Gardiner, Margaret Eleanor	Md.	Gasque, Thomas Nelson	
A.B. 1952, Dunbarton College		A.B. 1946, LL.B. 1947, University	Pa.
Gardner, Barbara Helen	Va.	of South Carolina	
Gardner, Benjamin Hill II	La.	Gassaway, Alexander Ramsey	D.C.
Gardner, Charles Louis	Nev.	A.B. 1950, University of Virginia	Va.
B.S. in E.E. 1947, University of		Gaston, Judith Anne	
New Hampshire		Gatcomb, Gerald Lloyd	D.C.
Gardner, Charles Norman	Md.	A.B. 1950, University of Maine	Va.
Gardner, Harold Wayne	W.Va.	Gates, Helen Cole	Vi.
A.B. 1951, West Virginia University		Gates, Margaret	D.C.
Gardner, Ivan Orlo	Md.	Gates, Nancy Lee	D.C.
B.S. 1952, University of Pittsburgh		Gatewood, Edward Lamar	N.Y.
Gardner, Leander Carl, Jr.	Va.	Gatsinos, Jack Henry	
Gardner, Marshall Closson	Md.	Gaudet, Richard Austin	D.C.
B.S. 1943, M.S. 1950, The George		B.M.E. 1947, University of Rochester	
Washington University		Gault, Mildred Cassandra	Va.
Gardner, Robert Elwood	D.C.	A.B. 1946, Converse College	Va.
Gardner, Robert Reynolds	Md.	Gause, Emmet Mablon	
A.B. 1951, Southern Illinois University		Gautier, Eduardo Emilio	Va.
Gargus, James Leon	D.C.	A.B. 1950, Marshall College	Va.
B.S. 1950, The George Washington		Gautney, George Ernest, Jr.	D.C.
University		Gauvain, Arthur	
Garlock, Robert Austin	Va.	Gavrisheff, Michael Boris	Va.
A.B. 1949, Union College		A.B. 1942, Mexico City College	D.C.
A.M. in P.A. 1953, The George		Gawley, John Leo, Jr.	
Washington University		Gawne, Robert Barrett	
Garner, Frances Lewis	Va.	B.S. in M.E. 1950, University of	D.C.
B.S. 1928, Mary Washington College		Notre Dame	N.J.
Garner, Frederick Reed, Jr.	D.C.	Gav, Richard Arthur	D.C.
Garner, J. D.	Va.	Gayda, Walter Frank	Ind.
B.S. 1947, Guilford College		Gaylord, Charlene Elizabeth	
Garner, Louis Herbert	D.C.	Gaynor, James Kenneth	
Garner, Robert Wright	D.C.	B.S. 1946, J.D. 1950, Indiana University	
Garner, Suzanne S. T.	D.C.	LL.M. 1953, The George Washington	N.Y.
Garner, Yancey Holmes	Md.	University	
Garofalo, Caterino G.	D.C.	Gayzur, Rudolph Joseph	D.C.
Garraby, Joan Lillian		B.S. 1952, University of Maryland	Va.
A.B. 1945, Dunbarton College		Gazda, Doris Joyce	Md.
Ed.M. 1952, University of Maryland		Geary, Daniel Joseph	Pa.
Garrett, Elizabeth Anne	Va.	Geddes, Donald Grant III	
Garrett, Lewis Fletcher	Va.	Gedrich, Herbert David	
A.B. 1949, Coe College		A.B. 1949, Pennsylvania State College	
Garrett, Ned	Ga.	M.B.A. 1951, University of	N.C.
B.S. 1940, U.S. Naval Academy		Pennsylvania	D.C.
M.S. 1947, Massachusetts Institute of		Geer, Rowena Artesa	N.Y.
Technology		Geer, Helen Fern	Calif.
Garrett, Paul Weatherly	Va.	Geer, Howard Stark, Jr.	
A.B. 1949, The George Washington		Geer, Wesley Harmon	D.C.
University		A.B. 1951, University of California	
Garrett, William Donaldson	D.C.	at Los Angeles	
B.S. 1953, The George Washington		Geerhart, Constance Vivienne	Ga.
University		A.B. 1952, Cornell University	Calif.
Garrick, Charles Miles	D.C.	Geeshin, Ernest	
B.Arch. 1924, Armour Institute		Gehle, Mildred Julia	Md.
Garrigan, Daniel Paul	N.Y.	B.Mus. 1933, American Conservatory	Md.
A.B. 1951, Drew University		of Music	Md.
Garrison, Anne Elizabeth	D.C.	Gehringer, Edward Charles	Va.
A.B. 1947, Oklahoma College for		Geibig, Eugene Philip	
Women		Geiser, Jesse Browning	
Garrison, Donald Carroll	D.C.	Gekker, Paul	
Garrison, Milton Eldridge	Va.	A.B. in Govt. 1948, A.M. in Govt. 1949,	Min.
Garno, Edward Joseph	Nev.	The George Washington University	
Guttrell, Archibald, Jr.	Md.	Goldman, Frederick John	
Garver, Carl Paul	Ill.	A.B. 1949, St. Louis University	
B.S. 1937, Northwestern University		A.M. 1952, Catholic University of	
M.L.A. 1949, Columbia University		America	
Garvin, Sylvia Ruth	D.C.		
Garwood, Darrell Nelson	D.C.		
A.B. 1933, University of Iowa			

Gelfand, Gloria Bogin A.B. 1945, Ohio State University M.S. 1950, Catholic University of America	D.C.	Gesler, Mary Byrd A.B. 1952, University of North Carolina	D.C.
Geller, Henry B.S. 1943, University of Michigan	D.C.	Gessner, Richard John Gettings, Theresa Anne	D.C. D.C.
Gellman, Murray J.D. 1949, Northwestern University		B.S. in Ed. 1911, Massachusetts State Teachers College, Worcester	
Gellman, Thelma Ann	Md.	Getz, Margaret Livingstone	Mass.
Gelwicks, Harold Galt	Va.	Gouss, Barbara Ann	Va.
A.B. 1912, College of Wooster	Va.	Gewirtz, Edwin Norman	Md.
Generely, Richard Fleury		A.B. 1952, University of Maryland	
Genelle, Augustine	D.C.	Gianakos, George James	D.C.
Gentry, Joseph Wesley	Md.	A.B. 1951, University of South Carolina	
A.B. 1945, University of North Carolina	Va.	Gibbins, Raymond Jacobus	Ariz.
Gentry, Penick	Va.	A.B. 1952, Stanford University	
A.B. 1950, Longwood College		Gibbons, Florence Katherine	Conn.
Gentsch, Roger William	N.Y.	Gibbons, Maybelle Elizabeth	Md.
A.B. 1951, Alfred University		Gibbs, Anna McLawhorn	N.C.
Georgiades, Nicholas Chris	D.C.	A.B. 1949, East Carolina Teachers College	
B.S. 1941, Stephen F. Austin Teachers College	Va.	Gibbs, Julian Glenwood	Md.
George, Elsa Louise	Honduras	Gibbs, June White	Va.
A.B. 1952, The George Washington University		B.S. 1947, College of William and Mary	
George, Henry Lewis	D.C.	Gibbs, Richard Sanborn	D.C.
George, James	Md.	Gibby, John Francis	Va.
B.S. 1950, Massachusetts Institute of Technology		A.B. 1949, Park College	
George, Josephine	Md.	B.S. 1952, University of Missouri	
George, Lynn Darcy	Va.	Giberson, Howard Samuel	Va.
A.B. 1951, The George Washington University		A.B. 1911, Harvard University	
George, Myron Don	Kans.	Gibney, Edith Cecelia	Pa.
Georgewich, Theodore Alexander	Va.	Gibson, Charles Cornelius	Nev.
Georgiades, Zenon Efthymiou	India	A.B. 1950, University of Nevada	
Geraghty, Eleanor Marie	N.Y.	Gibson, Donna Lee	Ill.
Geran, Ruth Iris	Va.	Gibson, Margaret Marie	D.C.
A.B. 1944, American University		Giehner, Susan Rosalie	D.C.
Gerard, Richard	Mo.	Gieske, Robert Anthony	Va.
B.S. 1949, Kansas State College		Giesler, Richard Porter	Ohio
Gerber, Eliot Samuel	Mich.	Gifton, Helen James	Mass.
A.B. 1951, J.D. 1953, University of Michigan		Gigli, Norma	D.C.
Gerber, Lloyd M.		A.B. 1952, Marymount College	
B.S. 1953, Brigham Young University	Utah	Gikan, Thomas	Md.
Gerboth, Harold Claude		B.S. in F.S. 1947, Georgetown University	
B.S. 1914, University of Wisconsin	Wis.	Gilbert, David McCalvey	Va.
A.B. 1950, The George Washington University	Va.	Gilbert, Gerald Henry	Pa.
Gerhart, Donald Samuel	D.C.	Gilbert, Lucy Adelia	Fla.
Gerold, William Franklin	D.C.	A.B. 1920, John B. Stetson University	
Gerken, Catherine Ann	N.J.	Gilbert, Stanley Ormand	D.C.
Gerlach, Richard Eugene	Mo.	Gildenhorn, Herbert Joseph	D.C.
Gerling, Robert Kinnsley	Md.	Gillillan, James McCracken	Va.
L.L.B. 1951, University of Wisconsin		Gill, Charles Richard	Md.
German, Everett Grant Jr.	D.C.	A.B. 1951, Lafayette College	
B.S. 1953, Virginia Polytechnic Institute		Gill, John Herbert	D.C.
German, Carrie Ann	Va.	Gill, Richard, Jr.	D.C.
B.S. 1951, University of Maryland	Md.	Gillespie, Constantine John	D.C.
Germano, Felix Joseph	N.Y.	A.B. 1952, The George Washington University	
B.S. 1952, Fordham University		Gillespie, Corne Burnley	Va.
Gerhartz, David Patricia	D.C.	Gillespie, Elizabeth R.	Ky.
Gerler, Donald Nelson	Md.	Gillespie, George John	D.C.
Geris, Albert Elliott	D.C.	A.B. 1952, The George Washington University	
Gerick, Harry Clarence	Va.	Gillette, Douglas Hamilton	D.C.
		B.S. in C.E. 1915, U.S. Military Academy	
		Gillette, Shirley Marie	D.C.
		A.B. 1951, The George Washington University	
		Gilliam, Carroll Lewis	S.C.
		A.B. 1949, A.M. 1950, University of South Carolina	
		Gilliam, Paul Edwin	Va.
		Gillies, Margaret Palmer	Va.

Gillikin, Jack E. A.B. 1950, Iowa State Teachers College	D.C.	Glass, Alvin B.S. 1952, University of Maryland	D.C.
Gilliland, Kay Fraser A.B. 1939, Mills College	Calif.	Glass, Eileen F. Glass, Norman Pilmer	Wa. Ohio
Gillim, Mary Varian A.B. 1952, Smith College	D.C.	A.B. 1937, Oklahoma City University	
Gillum, Parvin Douglas A.B. 1951, Dartmouth College	Ky.	LL.M. 1941, University of Oklahoma	
Gillinger, Robert Wayne A.B. 1948, Pennsylvania State College	Md.	LL.M. 1950, The George Washington University	D.C.
Gillis, Wellington Albert A.B. 1946, University of Alabama	Mass.	Glattstein, Alexander Glazier, Anne Andrea	D.C. Ill.
LL.B. 1952, Duke University		Glazier, Edward Harvey B.S. 1952, Wheaton College	Va. Md.
Gilless, Marcus Ronald A.B. 1951, Humboldt State College	Calif.	Glazier, Harold Stanley Gleason, Geraldine A.	
Gilliam, Frederick Easton Gilman, Charles Francis	Va. Va.	A.B. 1947, St. Mary College, Kansas Glenn, Dorothy May Dodge	Va. D.C.
A.B. 1948, The George Washington University		Glenn, James Hartman A.B. 1953, Duke University	N.C.
M.S. 1949, A.M. 1951, University of Illinois		Glenn, Ralph Ray A.B. 1947, University of North Carolina	Va. Va.
Gilmartin, Bernard Francis, Jr. B.S. 1950, College of the Holy Cross	Mass.	Glenn, Sam Bernard Glor, John Bancroft	
Gilmartin, Eugene Richard, Jr. Gilmore, Ferd Marvin	Va. Mo.	A.B. 1948, Williams College A.M. 1949, Columbia University	Md.
Gilmore, Francis John A.B. 1951, Georgetown University	Md.	Glover, Donald Jackson B.S. 1940, M.S. 1951, The George Washington University	Va. D.C.
Gilmore, Kenneth Otto A.B. 1951, Brown University	Mass.	Glover, James Edward Glovin, Paul Norman	
Gilmore, Lee Lowell Gibler, Elish Gene	D.C. Va.	B.S. 1951, College of the City of New York	
Gimbel, Gilbert Mandel A.B. 1951, Nebraska State College	Md.	A.M. 1953, New York University	D.C. N.Y.
Gingery, C. Aslen A.B. 1926, University of California at Los Angeles	Calif.	Glusovich, Lincoln Ivan Glynn, Andrew Martin	D.C. D.C.
LL.B. 1931, University of Southern California		Gnerro, Mark Lawrence A.B. 1948, St. Mary's University	D.C. Md.
LL.M. 1951, Georgetown University		Gobins, Ludmila Gochonour, Marian Elizabeth	N.Y.
Gingras, Pauline Jean Ginsberg, David Kellner	D.C. Md.	Goddard, William B.S. 1949, College of the City of New York	Va.
A.B. 1951, The George Washington University		Goedke, Milton Thomas B.S. 1941, University of Maryland	
Ginsburg, June Giskaris, James Daniel	D.C. Mo.	Ed.M. 1948, Johns Hopkins University	Md. D.C.
Giondano, Anthony Sam A.B. 1952, University of Maryland	D.C.	Goen, Neil Nupro Goens, Julien Raymond	D.C.
Gipple, Jim William Giralt, Almerigo	Wash. Md.	Goff, Charles Clifford A.B. 1950, West Virginia University	Md.
Giese, Harold Walter Gieselman, Dolores Carole	Va. D.C.	Gogarty, John Edward B.S. 1952, University of Maryland	Md. D.C.
Giles, Florence Gilem, Joseph Norman	D.C. Pa.	Gohn, George Milton, Jr. Goitein, Civana Marina	Md. D.C.
A.B. 1951, University of Pennsylvania		Gold, Lewis Goldberg, Alvin Irving	
Gilfison, Ralph Leonard Gifford, Robert Thomas	D.C. D.C.	B.S. in Ed. 1941, Boston University Goldberg, Bernice Elizabeth	Md. Tenn.
A.B. 1951, A.M. 1950, University of Rochester		Goldberg, David Elliott Golden, Joseph Carroll	Md. D.C.
Gusti, Natalie A.B. 1951, The George Washington University	Mass.	B.S. 1945, Tennessee Polytechnic Institute Goldenberg, Jerome Albert	D.C. Md.
Gjupanovich, Fran, Nicholas LL.D. 1942, University of Yugoslavia	D.C.	Goldenberg, Samuel Goldenthal, Edwin Ira	
Glaidden, James Wilson Glaser, Ivan Florence	Va. Va.	B.S. 1953, M.S. 1953, The George Washington University	Ala.
Glaser, Marilyn Glaser, Stanley	Va. Md.	Golder, Jacob Victor B.S. 1950, A.M. 1940, Boston University	N.Y.
Glaser, Sylvia Ivan Paul De Jur. 1941, Columbia University	Va.	Goldfarb, Kenneth Stanley B.M.E. 1947, Stevens Institute of Technology	D.C. Va.
Glasgow, Lawrence Gray B.S. 1958, Montana School of Mines	D.C.	Goldin, Sylvan Lippman Golding, Harold Frederick	
		B.S. 1951, University of Richmond	

Goldman, Martin	D.C.	Goodwin, George Edward	Okla.
Goldman, Sherman	Mass.	B.S. 1948, U.S. Naval Academy	
B.M.E. 1948, Northeastern University		Goodwin, Paul Russell	Md.
Goldman, William Allen	Va.	B.S. 1911, University of Maine	
Goldsmith, Mackenzie Lee	Md.	Goodyear, Julia Owsley	D.C.
Goldstein, George Kay	D.C.	A.B. 1914, Smith College	
Goldstein, Robert Harold	D.C.	Goetz, Walter Edwin	D.C.
Goldstein, David Carl	D.C.	Goray, Stanley Joseph	N.Y.
B.S. 1949, A.M. 1951, New York University		Gorder, Charles Franklin	N.D.
Goldstein, Edward	D.C.	B.S. 1947, U.S. Naval Academy	
Goldstein, Frances Zelda	D.C.	Gordin, George, Jr.	D.C.
Goldstein, Jonas Leo	Calif.	A.B. 1919, State University of Iowa	
A.B. 1950, University of California at Los Angeles		Gordon, Albert	Va.
B.L.S. 1951, University of California		B.M.E. 1944, College of the City of New York	
Goldstein, Leon George	Md.	Gordon, Alexander Rola	D.C.
A.B. 1946, A.M. 1949, University of Pennsylvania		Gordon, David McCall	Ill.
Goldstein, Robert Bernard	N.Y.	Gordon, Ellen Hendry	D.C.
Goldstein, Sheila Evelyn	D.C.	Gordon, Everett Mathews	N.J.
Golenbe, Carter Harry	Va.	Gordon, Forest	Md.
A.B. 1946, A.M. 1947, Ph.D. 1952, Columbia University		A.B. 1952, The George Washington University	
Golin, Gerald	D.C.	Gordon, Harriett Rawls	Va.
A.B. in Govt. 1952, The George Washington University		A.B. 1921, Earlham College	
Golia, Joseph Francis	Va.	Gordon, Harry Carl	Va.
A.B. 1944, A.M. 1956, Columbia University	Md.	Gordon, Helena Elizabeth	D.C.
Golin, Abraham		Gordon, John W.	Pa.
A.B. 1941, Brooklyn College		A.B. 1953, Bethany College	
A.M. 1944, University of Delaware		Gordon, Lenore Lithelrich	D.C.
Gombert, Audrey Lucille	Md.	Gordon, Lester Howard	Mass.
Gonzaga, Rufus Pompey Magalhães	D.C.	A.B. 1919, The George Washington University	
Gonzalez, Abraham Murray	Peru	Gordon, Mary Jo	Md.
Goss, Carl Edward, Jr.	Mont.	Gordon, Ruby Nell	Tenn.
Gossell, Marion Tristoff	D.C.	Gordon, Shirley Ruth	D.C.
Gossell, Thelma L.	Va.	Gordon, William Bernard	D.C.
Gosselin, Corolla Evans	D.C.	Gore, James Grafton	D.C.
Gossman, David Gerson	N.J.	Gore, Bill Stuart	Va.
B.S. 1947, New Jersey State Teachers College, Trenton		Gore, John William	
Gossman, David Louis	Texas	A.B. 1947, Shepherd College	
Gossman, Donald Elliott	D.C.	A.M. in Ed. 1950, The George Washington University	
Gossman, Harold Jacob	Va.	Gore, Mary Elizabeth	Va.
A.B. 1952, University of Richmond		Gori, Patrick Thomas	Md.
Gossman, James Francis	Md.	B.S. in Ed. 1951, Duquesne University	
Gossman, John Morton	D.C.	Gori Montanelli, Romano	D.C.
Gossman, Robert Stanley	D.C.	L.D. 1946, University of Florence, Italy	
Gossman, William Hercules, Jr.	D.C.	S.I.D. 1950, University of Virginia	
B.S. 1948, U.S. Coast Guard Academy	Ohio	Gorman, Amy Hilda	Wis.
Gossner, James Hampton	Va.	Gorman, Thomas Francis	D.C.
Gossner, Lynne Evelyn	Va.	Gosnell, Maude Ballard	Va.
B.S. 1951, U.S. Merchant Marine Academy	Md.	Gossett, Regina Stella	D.C.
Gossner, James Hampton	N.Y.	Gossett, James R.	Md.
Gossner, Lynn Evelyn	Va.	L.L.B. 1951, Washington University	
A.B. 1951, U.S. Merchant Marine Academy		Gossett, Raymond Francis	Va.
Gossner, Bernard Arthur	N.Y.	Gossman, John M. 1950	D.C.
Gossner, Carol Clifton	Va.	Gossman, Alexander Morey	Md.
A.B. 1949, Bridgewater College		B.S. 1951, A.M. in Ed. 1951, The George Washington University	
S.T.B. 1952, Westminster Theological Seminary		Gossett, Viola Margaret	Md.
Gossner, Neil Wyke	Va.	Gossett, Elizabeth Jewell	Md.
Gossner, Luke Barrett	Okla.	Gossett, George Marvin	Md.
A.B. B.S. 1957, University of Oklahoma		Gossett, Keith Barry	D.C.
Gossner, Melvin Gould	Ohio	Gossett, Robert J.	Md.
A.B. 1951, University of North Carolina	Idaho	Gossett, Warren	D.C.
Gossner, Carolyn Ruth		A.B. 1951, The George Washington University	
B.S. 1952, University of Idaho		Gould, William Isaac, Jr.	Pa.
		Gould, Clara K. 1947	D.C.
		A.B. 1947, Aligarh University, India	
		Gowen, Lawrence Bartholomew	D.C.
		Gower, Karl K.	D.C.

Gownley, High Joseph	Md.	Gray, Norman Hamblin	Va.
B.S. 1943, University of Scranton		A.B. in Ed. 1953, The George Washington University	Va.
Grab, Elizabeth	Va.	Gray, Patricia Carlin	Pa.
Grabfield, Dora Murray	Mass.	Gray, Robert Alan, Jr.	Va.
A.B. 1950, Smith College		Gray, Robert Fremont	
Grabowski, Alice June	D.C.	A.B. 1946, M.B.A. 1948, University of Michigan	D.C.
Grabowski, Jeanne	D.C.	Gray, William Nelson	Va.
Grace, Mary Ellen	Va.	Graybeal, Janice Eversly	D.C.
A.B. 1946, Denison University		Graybill, John Robert	D.C.
Gracias, Denis Francis	D.C.	Gravason, Satanelle	N.J.
Grady, Henry Michael	D.C.	Greatorex, Albert Tum	
Grady, Joseph William	Md.	A.B. 1950, St. Anselm's College	Va.
Geaf, Virginia Louise	D.C.	Greaves, Thomas Francis	Pa.
Graham, Ben Sanborn, Jr.	D.C.	A.B. 1951, Occidental College	Conn.
A.B. 1952, Ohio Wesleyan College	Ohio	Greb, Stella	Va.
Graham, Betty	Va.	Greblunas, Joseph Anthony	
Graham, Betty Rae	D.C.	Greco, Gertrude M.	
Graham, Frances Allegra	Md.	A.B. 1945, Brooklyn College	Md.
A.B. 1927, University of Nebraska		Green, Arleigh William	
Graham, George Emlen, Jr.	Md.	B.S. 1951, The George Washington University	Md.
Graham, Geraldine Agnes	D.C.	Green, Edward Harrison	
Graham, Kenneth Donald	D.C.	B.S. in P.E. 1951, A.M. in Ed. 1951, The George Washington University	Va.
B.S. 1953, University of Washington	Va.	Green, Gerald	Md.
Graham, Lucile Eleanor		Green, Jack Allen	Ala.
B.S. 1929, Cornell University	D.C.	Green, James Laffeter	
M.B.A. 1948, Stanford University		B.S. 1938, U.S. Military Academy	Va.
Graham, William Griffith	N.Y.	B.C.E. 1932, University of California	
B.S. 1946, U.S. Naval Academy		Green, John Taylor	
Grainick, Paul Philip	Ala.	A.B. 1940, Louisiana State University	D.C.
B.S. 1919, Brooklyn College		LL.B. 1949, University of Richmond	Md.
Granberry, William Alquin		Green, Mabel Hernan	
B. Ind. Eng. 1949, Georgia Technological Institute	D.C.	Green, Nancy Bevans	N.Y.
Grandpre, Armand Robert	Conn.	B.S. 1932, Armstrong College	
Grannan, Karl Clare	D.C.	Green, Norman	Va.
Grant, Blaine Dodds	Md.	LL.B. 1941, Columbus University	Utah
Grant, David Franklyn		Green, Phillip Lee	Md.
B.S. 1950, University of Vermont	Va.	Green, Robert Hansen	Conn.
Granville, John Matthew		Green, Robert Patrick	
B.S. 1932, Cornell University	D.C.	Greenbacker, John Everett	
Granville, Joseph Owen		B.S. 1940, U.S. Naval Academy	Mass.
B.S. 1946, A.B. 1948, St. Francis Xavier College, Nova Scotia		LL.B. 1949, Georgetown University	
Granner, Emil Ernst, Jr.	D.C.	Greenberg, Bernard	N.Y.
A.B. 1952, The George Washington University		A.B. 1948, University of Massachusetts	D.C.
Grasso, Michael	N.J.	Greenberg, Jerome	Va.
B.S. 1949, Bucknell University		Greenberg, Phyllis Sandra	D.C.
Grauman, Freda	D.C.	Greene, Caroline Brandon	Md.
A.B. 1938, Brooklyn College		Greene, Ellen Beale	D.C.
Greaves, Phyllis M.	D.C.	Greene, Frank Philip	Va.
A.B. 1950, Hunter College		Greene, Gary Edward	
Graves, Walter Albert	Va.	Greene, Katherine Virginia	
A.B. 1941, A.M. 1942, Syracuse University		A.B. 1947, Eastern Nazarene College	
Gravette, Marian Maxine	D.C.	A.M. 1948, The George Washington University	Va.
A.B. 1940, State University of Iowa		Greene, Vaughan Emory	D.C.
Gravitt, Dwight Lee	Va.	Greene, Walter Scott III	
A.B. in Govt. 1948, The George Washington University		B.S. 1952, Syracuse University	Utah
Gray, Damon Charles	D.C.	M.S. 1952, The George Washington University	
Gray, Edythe Asher	Ky.	Greener, Richard Leroy	D.C.
Gray, Grace Ann	Md.	A.B. 1952, University of Tennessee	
A.B. 1952, University of Delaware	Calif.	Greenfield, Bernard Justin	
Gray, John Albert		A.B. 1941, University of California at Los Angeles	N.Y.
A.B. 1940, University of California	D.C.	LL.B. 1950, University of Southern California	Md.
Gray, John Alexander		Greenfield, Julius William	
A.B. 1951, Dartmouth College	Md.	Greenhouse, Samuel W.	
Gray, John Arthur	D.C.	B.S. 1958, College of the City of New York	
Gray, Joyce Marie	Va.		
Gray, Lawrence James			

Greenville, George Walker	Md.	Grisham, Ethel Marguerite	Colo.
Greenwald, Judah	D.C.	Grob, Victor Edward	D.C.
A.B. in Govt. 1950, The George Washington University		Groenheim, Henry Arnold	Md.
Greer, Harry Holt, Jr.	Va.	A.B. 1950, Pennsylvania State College	
B.S. 1954, U.S. Naval Academy		Groening, Ralph Edward	D.C.
Greer, Alfred Marguerite	Ill.	A.B. in Ed. 1949, The George Washington University	
Greer, Richard Donald, Jr.	N.Y.	Groettum, The-shore Roger	D.C.
Greer, Thomas Jefferson, Jr.	D.C.	A.B. 1951, The George Washington University	
B.S. in Eng. 1950, The George Washington University		Groff, Nikki Diane	D.C.
Grego, Joseph Louis	Pa.	Groncki, Edward Theodore	Pa.
Gregos, Dolores Alexandra	Md.	A.B. 1946, University of Scranton	
Gregory, Katherine	Conn.	L.L.B. 1950, Columbus University	
A.B. 1948, Bryn Mawr College		Groom, Phyllis Pearl	D.C.
Greiner, Carolyn Margaret	Mich.	B.S. 1946, Miami University	
Grannon, Margaret Alacoune	Mont.	Grosfeld, Jay L.	N.Y.
Ed.B. 1944, Duquesne University		Gross, Herbert Samuel	Md.
Gree, Ralph Herbert	Fla.	Gross, Jo Ann	Va.
A.B. 1946, Catawba College		Gross, Judith Rae	N.Y.
Grier, Floyd John	Pa.	Gross, Sidney Ralph	Ill.
Griffin, Benjamin Franklin	Va.	Grossman, Harold A.	N.Y.
B.F.E. 1951, University of Virginia		A.B. 1946, New York University	
Griffin, Charles Narey, Jr.	D.C.	Grossman, Naomi Barbara	D.C.
Griffin, Cyril Gerald	Va.	Grossman, Phillip	N.Y.
B.S. in C.E. 1940, Northwestern University		B.S. 1952, New York University	
Griffin, David Reese	Ala.	Grossman, Rochelle	D.C.
B.S. 1941, Alabama Polytechnic Institute		Grote, Herwig Christian	Germany
Griffin, Donald Tallmadge	Va.	L.L.D. 1953, University of Freiburg	
A.B. 1925, Cornell University		Groves, Gerald Richard	Va.
Griffin, James Arthur	Va.	A.B. 1951, The George Washington University	
A.B. 1951, The George Washington University		Groves, William Maynard	Md.
Griffin, James Edwin	Va.	B.S. 1951, New York State Teachers College-Oswego	
B.F.E. 1949, University of Virginia		Grubbs, Doris McCreary	Md.
Griffin, James Ellsworth	Mich.	Grubbs, Robert McClean	D.C.
A.B. 1951, University of North Carolina	Ky.	Gruis, Edward George	Ind.
Griffin, Landon Larkin		B.S. 1949, M.S. 1951, Purdue University	
Griffin, Mary Ruth	Va.	Dr. en Droit 1950, University of Lyons, France	
Griffin, Oliver Francis	D.C.	Gruis, Rosemary Nottingham	Ind.
Ph.B. 1941, Loyola University	Calif.	B.S. 1947, Purdue University	
Griffin, Robert Julian		Grunfelder, Conrad, Jr.	Md.
Griffie, Willard Earl	Ga.	Granley, Martin Robert	Md.
A.B. in Govt. 1950, The George Washington University	D.C.	B.C.E. 1938, College of the City of New York	
Griffin, Edna Berks	Va.	Grouer, Donald Robert	D.C.
Griffin, Clyde Lamont	Maine	Groves, Mildred Carter	D.C.
B.S. 1939, Boston University		Grzeskiewicz, John Joseph	Md.
L.L.B. 1941, Boston University		R.S. 1951, Wilson Teachers College	
Griffin, Elizabeth Jane	D.C.	Guarco, Barbara Ann	D.C.
A.B. in Ed. 1952, The George Washington University	Va.	Gudat, Michael Lawrence	Va.
Griffin, Susan Pauline		Guenther, Louis Charles	Va.
Griffith, Mariel Elaine	Va.	A.B. 1914, Northwestern College	
Griffith, Harold Markatos	Okla.	A.M. 1918, University of Pittsburgh	
A.B. 1952, Boston University	D.C.	Guerard, Hume Lucas	Va.
M.S. in P.H. 1951, Columbia University		Guernon, Alfred M.	D.C.
Griffith, James Robert	Va.	A.B. 1952, University of the Philippines	
Griffith, Eleanor Susan	Mass.	Guernon, Harry Joseph, Jr.	Pa.
B.S. 1941, U.S. Naval Academy	Md.	A.B. 1951, St. Vincent College	
Grimes, Garland Glenn	D.C.	Guerrin, Mary Yvonne	Ind.
Grimes, James Foster	Va.	A.B. 1951, Trinity College	
Grimald, Edwin John	Va.	Guervara, Santiago y Garcia	D.C.
Grise, Leonard Leonard	Wash.	B.S. 1951, U.S. Military Academy	
Grismore, Nelson Thomas	Va.	Grost, Lillian	Pa.
B.S. 1948, M.S. 1950, University of Illinois	Md.	Grost, Marion Immanuel	Fla.
		B.Arch. 1948, University of Florida	
		Guggenheim, Marjorie Gibson	D.C.

Gugino, James Carl	N.Y.	Hadley, Doris Sanford	Pa.
B.S. 1952, New York State Teachers		Hadley, Hershel Nixon	Md.
College, Fredonia		A.B. 1939, Whitman College	D.C.
Guice, Cecile Addison	Va.	Haeker, Lilian Ryan	D.C.
Guileen, Anne Theresa	Mass.	Haels, Richard Alan	Va.
A.B. 1950, University of Massachusetts		Haffer, Hilda Thompson	Md.
Guild, Samuel Murton	Va.	B.S. 1938, Wilson Teachers College	
Gutler, Debbie Ruth	Fla.	Hafner, Louis S.	
Gunnar, Warren Alonzo	Nebr.	B.S. 1937, St. John's University	
A.B. 1941, University of Nebraska		M.S. 1951, Bradley University	D.C.
Gulick, Helen Ramsey	Va.	Hagen, Hazel E.	Md.
A.B. 1952, Oberlin College		Hagedorn, Robert Lee	D.C.
Gulick, Richard Ivan	Md.	Hagen, Harriet Jean	D.C.
B.S. 1945, U.S. Naval Academy		Hagenbucher, John Thomas	
Gullan, Harold I.	Md.	B.S. 1950, Philadelphia College of	
A.B. 1951, Johns Hopkins University		Pharmacy and Science	Md.
Gunter, Virginia Clark	Va.	Hager, George Frederick	Md.
Gunther, John Joseph	D.C.	Hager, Harriet Jean	Va.
A.B. 1947, University of Kansas		Hagerling, Ruth Eleanor	
Gunther, Lawrence Justin	Pa.	B.S. in B.A. 1940, Nebraska Wesleyan	
Gunther, Robert M.	D.C.	College	Va.
Gupta, Ramapati Das	India	Hagerman, George Melotte	D.C.
A.B. 1940, Calcutta University		B.S. 1941, U.S. Naval Academy	D.C.
Gurde, Virginia Margaret	D.C.	Haggart, Ronald D.	D.C.
Gustafson, Charlotte Matilda	D.C.	Haggerty, John Aloysius, Jr.	D.C.
Gustafson, Dawn Theodora	D.C.	Haglund, R. Conrad	
Gustafson, William L., Jr.	N.Y.	B.S. 1949, American University	D.C.
A.B. 1950, Brooklyn College		Haglund, Russell Martin	D.C.
Guterman, Herman E.	Pa.	Hahn, David Boston	Va.
A.B. 1942, University of Scranton		Hahn, Margaret Eleanor	
Gutheinz, Joseph Richard	N.Y.	Hahn, Walter Charles, Jr.	Md.
A.B. 1950, American University		B.S. 1952, Lafayette College	
Guthrie, William Joseph, Jr.	Mass.	Haile, Amelia Kolk	Va.
A.B. 1952, The George Washington		B.S. 1950, Johns Hopkins University	Md.
University		Hailey, Donald Allen	N.Y.
Gutierrez, Rafael A.	D.C.	Haines, Alan Paul	Md.
Gutkin, Jay Bernard	N.Y.	Haines, Bruce P.	Fla.
Guy, John Andrew	D.C.	Haines, Frances Marble	D.C.
A.B. 1938, A.M. 1950, Columbia		Harston, Delores Leidrup	
University		Hekim, Abdul Hosman	D.C.
J.D. 1941, New York University		B.M.E. 1952, Miami University	Nebr.
Guyves, Mildred C.	D.C.	Halbert, Jessie Dawn	
Guymon, Roy	Ill.	Hald, Helen Frances	
Guzman, Humberto	D.C.	A.B. 1939, A.M. 1950, University of	D.C.
Guzman, Roman Enriquez	D.C.	Nebraska	Ala.
Guzman, Santiago M.	Texas	Hale, Beatrice June	N.Y.
Gwynne, Edmund Chaffonte	Pa.	Hale, Curtis Clark	
		Hale, Harvey Robert	Md.
		A.B. 1951, State University of Iowa	
		Hale, Jane Norvell	Md.
		A.B. 1953, College of William and Mary	Va.
		Hale, Lester Turner	
		Haley, Louis Albin	Va.
		A.B. 1953, The George Washington	N.J.
		University	Conn.
		Haley, Violet Lowry	
		Halick, Mary Magdalynne	
		Halish, Walter George	Pa.
		A.B. in Govt. 1949, The George	Va.
		Washington University	Va.
		Hall, Anna Campbell	Md.
		Hall, Audrey Doney	Va.
		Hall, Bettie Nan Ormsby	
		Hall, Charles Llewelyn	Va.
		Hall, Charles Wilbur	Pa.
		B.S. 1950, University of North Carolina	
		Hall, David Alan	Minn.
		Hall, Glenn Leslie	Va.
		A.B. 1949, Lebanon Valley College	W.Va.
		Hall, Harriet Ellen	
		Hall, James Aldrich, Jr.	
		Hall, James Ray	
		B.S. 1948, West Virginia University	

II

Haas, Barbara Ann	D.C.		
Haas, Betty Ann	Md.		
Haas, Everett Leo	D.C.		
Haas, Jacquelyn	Va.		
B.S. 1951, University of Rochester			
Haebeker, Thomas Benjamin	Md.		
B.S. 1946, Massachusetts Institute of			
Technology			
Habergarten, Charles Joseph	Minn.		
A.B. 1950, College of St. Thomas			
Haberland, Jean	D.C.		
A.B. 1952, Converse College			
Hackett, Nina J.	Fla.		
Haskavlo, Edward	W.Va.		
A.B. 1940, A.M. 1950, The George			
Washington University			
Hadad, Salem John, Jr.	Pa.		
B.S. 1940, Scranton University			
Hadley, Dallas Deryl	Va.		
Hadfield, Reed Warburton	Utah		
B.S. 1952, Utah State Agricultural			
College			

Hall, Marian Virginia	D.C.	Hamrick, Lillian Aline	D.C.
Hall, Nathan Gray	N.C.	A.B. 1935, University of Chattanooga	
Hall, Richard Hayes	Md.	B.S. in L.S. 1945, George Peabody College for Teachers	
B.S. 1952, University of Maryland		Hanache, Marie Adele	N.Y.
Hall, Robert Livingston	Texas	A.B. 1951, College of New Rochelle	
B.S. in Eng. 1940, Texas Western College		Hancock, Alton Guy	Va.
Hall, Suzanne		Hancock, Nell	Tenn.
Hall, W. Travis	Md.	Hand, Harold Ronald	Pa.
Hand, William Henry, Jr.	Va.	B.S. 1952, Franklin and Marshall College	
Hand, Walter Robert	D.C.	Hand, Paul Wheeler	Md.
Handberg, Frederick Carl	Md.	Hand, Thomas Miller, Jr.	N.J.
Hale, Charles White	Md.	Hand, William Lawrence	Va.
A.B. 1951, Williams College	Ind.	Haney, Alice Rose	D.C.
Halloran, Terence Griffin	Va.	Haney, Earle, Jr.	D.C.
B.S. in Ed. 1950, University of Florida		Haney, Joanne Alexander	D.C.
Hallman, Clarence Kenneth	Va.	Haney, Phyllis Vera Lee	Va.
Halloran, Michael James	N.Y.	Hanley, Mary Lou	Va.
Halloran, Norman Jerome	Colo.	Hanley, Thomas Lesley	Md.
Halon, Iva	Md.	A.B. 1951, University of Miami	
Hanson, Mary	Md.	Hanlon, Paul Frederick	Mass.
Hanson, Mark Calvin	D.C.	A.B. 1940, University of Notre Dame	
Halpert, Nathan Andrej	D.C.	A.M. 1951, Boston College	
Halsey, Doris	N.H.	Hanner, Frank Joseph	N.Y.
Halter, Louis Nason	Pa.	B.S. 1938, New York University	
B.S. in Ed. 1951, Pennsylvania State Teachers College, California		A.M. 1939, Columbia University	
Ham, Barbara		Hann, William Donald	D.C.
Hamaguchi, Akira	Va.	B.S. 1952, Wilson Teachers College	
A.B. 1954, University of Hawaii	Hawaii	Hanna, Elmore A.	D.C.
Hamamura, Tomo		Hannan, William Everett, Jr.	Va.
Hamby, George	D.C.	A.B. 1926, Dartmouth College	
A.B. 1950, Brigham Young University	Ariz.	Hannebaum, Janice Ray	Okla.
Hamby, Mary Louise		Hanning, Florence Anne	Va.
Hamed, Rockford Norris	Okla.	Hannon, Mary E.	D.C.
Hamed, Mohammed	W.Va.	Hannon, Robert Fred	D.C.
Hamilton, Anna Braithwaite	D.C.	A.B. 1951, Catholic University of America	
Hamilton, Edwin Earl	Va.	Hannum, William Hamilton	Fla.
B.E.E. 1950, The George Washington University		Hansen, John Walter	D.C.
Hamilton, James Andrew	Iowa	Hansen, Melvin Robert	Nebr.
A.B. 1951, Morningsside College		Hansen, Orval Howard	Idaho
Hamler, Dollie Rubye	Iowa	A.B. 1950, University of Idaho	
A.B. 1949, The George Washington University		Hansen, Richard Williams	D.C.
Ham, Charles Sherman	Va.	Hansen, Wendell Dean	Va.
A.B. in Ed. 1946, A.M. in Ed. 1947, The George Washington University		Hanshaw, Diane C.	W.Va.
Hammett, Gloria Mae		Hanshaw, Frank Edward, Jr.	W.Va.
Hammett, Murray Fredric	D.C.	B.S. 1951, Davidson College	
A.B. 1948, University of Rochester	N.Y.	Hanson, Barbara Elizabeth	D.C.
Hammond, Janis Marilyn	Va.	Hanson, Elmer Leroy	Va.
A.B. 1951, The George Washington University		Hanson, Kermit Henry	Wis.
Hammond, Noel Bailey	D.C.	A.B. 1951, Carroll College	
B.S. 1951, University of Houston		Hanson, Rodney Louis	Va.
Hammond, Thomas Milton	N.Y.	Hanson, Virginia G.	Md.
B.S. 1949, University of Pittsburgh		Hanson, Walter Fritzof	Conn.
Hamon, Wilbur Russell	D.C.	A.B. 1952, University of Connecticut	
B.S. 1944, Eastern Kentucky State College	Ky.	Hanson, William Bert	Minn.
Hamor, William Joseph		B.S. 1944, M.S. 1949, University of Minnesota	
B.M.E. 1951, The George Washington University	Md.	Hanyok, Andrew	Md.
Hampton, Barbara Mae	Tenn.	Hanyok, Paul	Md.
Hampton, Virginia Adeline	D.C.	Hanyok, Stephen	Pa.
Hamrick, Eugene Lynn	D.C.	Haraldsdottir, Elm Sveindis	D.C.
		A.B. 1952, A.M. 1953, Florida State University	
		Haran, Hilda Gay	Ala.
		Harbert, William Eugene	Md.
		Harbison, Earle Harrison, Jr.	Va.
		A.B. 1948, Washington University	
		Harbold, William Kump	Va.
		A.B. in Govt. 1950, The George Washington University	
		Harde, Charles Francis	Conn.

Harden, Marilyn Louise	N.J.	Harris, James Edgar			Tenn
B.S. 1942, Tufts College		A.B. 1940, Hardin-Simmons University		Va.	
Hardesty, John Franklin, Jr.	D.C.	Harris, Jeanne Lejeune Glennon			Wis.
A.B. 1950, Washington and Lee University		A.B. 1944, The George Washington University			D.C.
Hardin, Carolyn Myrick	Md.	Harris, John Warton, Jr.			Md.
Hardin, Mary Joshlynn	D.C.	A.B. 1950, University of Wisconsin			Va.
Harding, Lynwood Julian	D.C.	Harris, Martha Jane			Okl.
Hardison, John Andrew	Va.	B.S. 1941, University of Pittsburgh			
Hardison, Margaret Ann	D.C.	Harris, Melvin Ray			
Hardman, Edwin Louis	W.Va.	Harris, Miles Fitzgerald			
Hardman, Frances Boone	Ohio	B.S. 1944, New York University			
A.B. 1952, Denison University		Harris, Paul Austin			
Hardman, Ward Forrest	Mo.	A.B. 1949, The George Washington University			
B.S. 1933, U.S. Naval Academy		Harris, Robert Dermot			
Hardy, Harris Valerie	D.C.	Harris, Robert William			
Hardy, Frank Merrill	Md.	A.B. 1952, Colgate University			
A.B. 1949, New York University		Harris, Virginia Berenice			
M.S.P.H. 1951, University of North Carolina		B.S. 1948, University of Virginia			
Hardy, Harry Milton	Md.	A.M. in Ed. 1950, The George Washington University			
Hardy, Mary Jean	Va.				
Hare, Ruby Evelyn	N.C.	Harris, Waldo			
Harenberg, Donald Clarence	Va.	Harris, William Clayton, Jr.			
Hargraves, Philip Clifford	D.C.	Harris, Willie Lucille			
Harkabus, Robert Joseph	N.J.	Harrison, Alexander			
B.S. 1950, St. Peter's College of Arts, Sciences, and Business Administration		A.B. in Govt. 1953, The George Washington University			
Harley, John Key	Ky.	Harrison, Allen Edward			
Harlow, Lloyd Edward	Md.	Harrison, Allen Hugh, Jr.			
Harmel, Morton William	Md.	Harrison, Gail Beverly			
B.S. 1941, Wilson Teachers College		Harrison, John Millard			
Harmeyer, Edward John	La.	Harrison, John Wilbur, Jr.			
B.S. 1949, Louisiana State University		Harrison, John Yarlmg			
Harmon, John Engler	Va.	Harrison, Marion Edwyn II			
A.B. 1948, A.M. 1949, West Virginia University		A.B. 1951, University of Virginia			
Harnett, Joan Helen	Va.	Harrison, Polly Randall			
Harper, Curtis Paul	Ala.	Harrison, Virginia W.			
Harper, Edith Elizabeth	D.C.	Harrison, William Marcus			
A.B. in Ed. 1950, The George Washington University		B.S. 1942, University of Tennessee			
Harper, George Albert	Va.	M.S. 1949, New York University			
Harper, Jayne Frances	D.C.	Harrison, George Latham			
Harper, Jesse Harper	Va.	B.S. 1947, U.S. Naval Academy			
B.S. 1949, Rider College		Harrold, Frances Long			
Harper, Josephine Ardella	N.C.	A.B. 1952, Radcliffe College			
Harper, Max Cyril	Ala.	Harrow, Adele Minnie			
Harper, William Rosque	Ky.	Hart, Charles Arvel			
Hassell, Richard Lumbbrick	D.C.	B.S. 1942, Wake Forest College			
Harrigan, Robert Evans	Md.	Hart, John Thomas			
B.S. 1952, American University		B.S. 1951, Rutgers University			
Harrington, John Joseph	D.C.	Hart, Laurence Cables			
Harrington, Mary Jane	D.C.	Hart, Marice C.			
A.B. 1940, University of Maryland		Hart, Ruth Street			
Harrington, Patricia Joan	Va.	A.B. 1942, Wellesley College			
Harrington, Robert Desmond	Md.	A.M. 1948, Catholic University of America			
B.S. 1952, Virginia Polytechnic Institute		Harte, Phyllis Jacqueline			
Harrington, William Richard	Mass.	Hartley, Hugh Harris			
B.S. 1951, Massachusetts State Teachers College, North Adams		Hartley, Janet Wilson			
Harris, Ben Thompson	Va.	B.S. 1949, University of Maryland			
Harris, Bertha Elaine	N.C.	M.S. 1951, The George Washington University			
Harris, Bertha Florence	D.C.	Hartman, Orvis Barton			
Harris, Boyd Edward	S.C.	B.S. in Aero Eng. 1947, B.S. Eng. and Bus. Adm. 1948, Massachusetts Institute of Technology			
Harris, Charles Marshall	D.C.	Hartman, Richard Dowd			
B.S. 1951, Salem College		A.B. 1951, Lebanon Valley College			
Harris, Charles Williams	Md.	Hartnett, Maurice Aloysius III			
Harris, Frances Lee	D.C.	B.S. 1951, University of Delaware			
Harris, Isabella Deas	Ga.	Harter, Donald Gregory			
A.B. 1956, Wesleyan College		B.C.E. 1948, Brooklyn Polytechnic Institute			
A.M. 1933, Ph.D. 1948, Duke University					

Harvey, Barbara Sillars			
Harvey, Joseph Spencer	Md.	Haymaker, George Russell, Jr.	Va.
Harvestter, Helen Jean	D.C.	Haynes, Curtis Franklin	D.C.
Hasal, Milan, Jun	Md.	Haynes, Hellen Hanford	D.C.
B.S. 1952, American University	D.C.	Haynes, Samuel Merrell	D.C.
Havala, Milica Jelizaveta		Haynes, Susan Oden	Md.
Hash, Samuel Lee	D.C.	Haynie, Thomas Marsh	Va.
Hassett, Ennis James	Md.	A.B. 1950, Randolph-Macon College	
A.B. 1952, Boston University	Mass.	Hays, James Murtach	D.C.
Hart, Frank Bowman, Jr.		Hays, James Robert	W.Va.
Hartman, James Eastman	Md.	Hays, Richard Leland, Sr.	Kans.
Hartman, William Harold	D.C.	Hayth, William Donald	Md.
Hart, Charles Lynn	Va.	Haywood, Philip Garry	Md.
Hart, Douglas Lorenzo, Jr.	Tenn.	B.I.E. 1937, Ohio State University	
Hathfield, Lorraine H.	Va.	Hazeltime, Patricia Ann	N.J.
B.S. 1925, North West Missouri State	Md.	Hazelworth, John Beemon	D.C.
Teachers College		B.S. 1947, M.S. 1949, University of	
Hathfield, Norman Lee		Michigan	
B.S. 1951, University of Chattanooga	Tenn.	Hazlett, Patricia Collins	Calif.
Hatton, Janet Jehls	D.C.	Hazzard, Charles Bullock, Jr.	Va.
A.B. 1951, Bradley University		B.S. in C.E. 1942, Princeton University	
Hatton, Patricia Mary	D.C.	Head, Robert Vincent	D.C.
B.S. 1952, Bradley University		A.B. in Govt. 1952, The George	
Haut, Ruthadele L.	Va.	Washington University	
A.B. 1945, University of Iowa		Healey, Patrick Francis	Md.
A.M. 1949, University of Chicago		Healy, John Joseph	D.C.
Hauweto, Tore		Healy, John Mathew	Ohio
Haus, William Leo	N.Y.	B.S. 1950, Notre Dame University	
B.S. 1948, Pennsylvania State Teachers	Md.	Healy, Mary Kathleen	D.C.
College, Shippensburg		Heard, Townsend	Mass.
Haughan, Gertrude Marion	D.C.	Heatherly, James Clark	Va.
A.B. 1951, The George Washington		A.B. 1950, University of Tennessee	
University		J.D. 1952, The George Washington	
Hask, Rosalind		University	
Hauptman, Anna	Md.	Heaton, Elizabeth Rounceville	Va.
Hauptman, Sidney	D.C.	Heaton, Sara Dudley	D.C.
B.S. 1949, College of the City of	D.C.	Heaton, William Edmond	Ind.
New York		B.S. in M.E. 1943, Purdue University	
Hauptman, William Francis		Heatwole, David Stanley	D.C.
Hausman, Howard Jay	Md.	Heazlit, Theodore Willard	Md.
A.B. 1939, College of the City of	N.Y.	Heberling, Paul Douglas	Muh.
New York		Heek, John Henry	Pa.
A.M. 1942, New York University		A.B. 1941, Pennsylvania State College	
Hausmann, John Henry		A.M. in Govt. 1951, The George	
B.S. in P.E. 1950, The George	Pa.	Washington University	
Washington University	Va.	Heckert, Jackson Shaffer	Md.
Havens, William Dodge, Jr.		B.S. 1942, Pennsylvania State College	
B.S. in P.E. 1950, The George	D.C.	Heckert, John Dalton	W.Va.
Washington University	Va.	A.B. 1951, West Virginia University	
Hawkins, Bobby Gene		Heckert, William Franklin	Va.
Hawkins, Ethel Crew		B.S. 1949, M.S. 1950, Michigan State	
A.B. 1945, A.M. 1938, University of	D.C.	College	
North Carolina	Pa.	Heckman, Alexander Irving	Md.
Hawkins, Eve Fridell		A.B. 1951, The George Washington	
B.S. 1949, Fordham University		University	
A.M. 1952, Catholic University of		Heckman, Hisako Takamine	Okinawa
America		Heden, Karl Eric	N.Y.
Hawkins, Thomas Joseph Joles	Oras.	Hedges, William Elbridge	D.C.
A.B. 1937, University of Portland		B.S. in Chem. 1951, Tufts College	
Haworth, Marjorie Helen	D.C.	Hedland, Mark Wayne	Minn.
A.B. 1942, Mills College		A.B. 1950, A.M. 1951, University of	
Hawvermale, Herbert Earl	Md.	Minnesota	
Hayakawa, Kenneth Kiyoshi	D.C.	Hedlike, Kenneth Arthur	Minn.
Hayden, James Howard	Md.	A.B. 1949, University of Minnesota	
A.B. in Govt. 1950, The George		Hee, Olman O.	Md.
Washington University	Conn.	B.S. 1958, University of Minnesota	
Hayer, Cornelius John		Heelen, John Edward	Md.
A.B. 1950, Yale University	D.C.	Heemstra, Howard Charles	Va.
Hays, John Harold	D.C.	B.Arch. 1952, Iowa State College	
Hays, Margaret Faulds	Va.	Heet, Robert E.	D.C.
Hays, Robert Caldwell	Vt.	A.B. 1942, University of Dayton	
Hays, Walter Harold		Heffelfinger, Joanne Callery	D.C.
A.B. 1948, University of Vermont		A.B. 1952, Radcliffe College	

Heffernan, Richard Thomas	Va.	Henebry, Alfred Garrett	D.C.
Heffner, Anne Holland	Va.	A.B. in Ed. 1949. A.M. in Ed. 1951.	
A.B. 1947, University of North Carolina		The George Washington University	D.C.
Heffner, Bernard Lawrence	D.C.	Henegar, Harold Hubert	
Heffner, Edward Murray	D.C.	B.S. 1916, Southwest Missouri State	
Heichler, Lucian	Va.	College	
A.B. 1947, A.M. 1951, New York		A.M. 1949, University of Missouri	Mich.
University		Heneveld, Lloyd Allen	
Heidenberr, Peter Alexander	D.C.	B.S. in E.E. 1950, University of	
L.I.D. 1949, University of Munich		Michigan	D.C.
Heidenthal, Dorothy Elnor	D.C.	Henkin, James Bailey	D.C.
Heider, George Charles, Jr.	Md.	Hennegen, Lloyd George	D.C.
B.S. 1950, University of Maryland		Hennes, Shirley M.	Conn.
Heier, James Oliver	Va.	Hennessy, John William	
Heil, John Joseph	Md.	A.B. in Govt. 1951, The George	
Heilman, Janet Caroline	D.C.	Washington University	D.C.
A.B. 1952, Mary Washington College		Hennigan, Helen Mary	W.Va.
Heilmeyer, Ellen Barbara	D.C.	Hensy, James Faulkner	D.C.
Heimann, Jack Hans	N.Y.	Hensy, Jo Ann	Maine
B.E.E. 1950, College of the City of		Henry, Laura Lucinda	
New York		Henry, Merton Goodell	Va.
Hein, Dorothy Ann	Conn.	A.B. 1957, Bowdoin College	Va.
Hein, Gerald Arthur	Md.	Hensy, William Harold	D.C.
A.B. 1952, Syracuse University		Henshaw, Dorothy Ann	Md.
A.B. 1952, Hildale College		Henshaw, Ida Jean	
Heintz, Allen Capron	Md.	Henson, Edwin Ray, Jr.	
B.S. 1955, Sweet Briar College		B.S. 1949, Colorado Agricultural and	Fla.
Heintz, Eva Edwin	Md.	Mechanical College	Fla.
Heintz, Margaret Lillian	D.C.	Henthorne, Lon Ayala	
B.S. 1949, Oklahoma State Teachers		Henthorne, Robert Dale	D.C.
College, Durant		D.V.M. 1943, Ohio State University	
Heichman, Jennie Rose, Jr.	Va.	Heon, Agnes George	
Heider, John Bernard	Ill.	A.B. 1951, The George Washington	N.Y.
Heider, Laura	D.C.	University	Md.
Heidrich, Kenneth Edward	Md.	Hepler, Richard Alvin	
Heig, Edward Jerome	D.C.	Herbert, Edward Leslie	
Heller, John Michael	Md.	A.B. 1948, The George Washington	D.C.
Heller, Milton	Md.	University	
B.S. 1948, The George		Herbert, Frank Ray	N.H.
Washington University		A.B. 1951, Middlebury College	D.C.
Helfman, Ed	Md.	Herbat, Emil Adelbert	D.C.
Helm, Orin William	D.C.	Herbat, Robert Van Cortlandt	
B.S. 1952, Virginia Polytechnic Institute		Herd, Jean Robert	D.C.
Helm, Cyrus Robert	Md.	A.B. 1950, Johns Hopkins University	D.C.
Helm, Manuel Louis	D.C.	Herman, Dolores Carole	Md.
A.B. in Govt. 1950, The George		Herman, Elton	D.C.
Washington University		Herman, John Rufus	N.Y.
Hemming, Winston Anderson	D.C.	Herman, Monte Arnold	
Hemple, William Ernst	D.C.	Herman, Sally Ann	D.C.
A.B. 1952, Syracuse University		A.B. 1952, Hood College	Pa.
Hemph, Aparna	India	Hernandez, Alfredo	
A.B. 1952, Elphinstone College, India		Hernandez, Richard Middleton	
Hemerick, Stanley William	Md.	A.B. 1941, Washington and Lee	D.C.
B.S. 1947, Ohio State University		University	Norfolk
Henderson, Lawrence Raymond	Pa.	Hershen, Roy Clifford	12.
Henderson, Corinda Macola	Idaho	Hewes, Tiaff	
Henderson, Frances Anne	Md.	Hess, Alfred Oliver	
A.B. 1947, Barnard College		B.S. 1945, U.S. Military Academy	P2
Henderson, Lyn	D.C.	A.M. 1950, Vanderbilt University	D.C.
Henderson, Russell Stewart	D.C.	Hest, Harriet Martha	D.C.
Hendley, George Frederick	Va.	Hewell, Richard Milton	D.C.
Hendley, Homer Ray	Va.	Hester, Nedale	N.Y.
Hendrick, Barbara Diane	Va.	Herrera, Valma Maria	Va.
Hendrick, Earl George, Jr.	Va.	Herrmann, Emma Elisabeth	
Hendrick, Robert Edward	D.C.	Herron, Emma Evelyn	D.C.
Hendrick, Charlotte Anne	D.C.	Hersch, Harold Harley	Va.
Hendrick, Martha Sue	Mia.	A.B. 1951, Bowdoin College	D.C.
Hendrick, Paul Elia	Ill.	Hardberger, Hazel Kubin	
A.B. 1950, The George Washington		Hershey, Gilbert R. Hudson	
University		Hershey, David M. Israel	
		A.B. 1948, University of California	
		at Los Angeles	

Herrnberg, John Shearer A.B. 1948, Hobart College	N.Y.	Hill, Jane Kinsman	D.C.
Hershey, George Merrill	Va.	Hill, John David	Mch.
Hessberg, Chassey, Jr.	Va.	Hill, R.S. 1950, Wayne University	
Hessberg, Lazen M.	Va.	Hill, John Ivan	Md.
Hessing, Lorna Sybil	Md.	Hill, Marvin Sidney	D.C.
Hessing, Charles Edwin	D.C.	Hill, Owen Hollis, Jr.	D.C.
Hess, Lawrence Eugene, Jr.	Va.	Hill, Patricia Mae	Ohio
B.S. 1946, U.S. Naval Academy	Pa.	Hill, Richard Wayne	Oreg.
Hesse, Carole Theresa		A.B. 1951, Brigham Young University	
Hessler, Brian Joseph	D.C.	Hill, Rosalind R.	Va.
A.B. 1951, University of Maryland	Md.	B.S. 1946, University of Illinois	
Hessler, Marion Agnes		Hill, Rosemary	D.C.
Hessington, Flavia Monroe	Va.	A.B. 1949, Lynchburg College	
B.S. 1934, U.S. Military Academy	Texas	Hill, Samuel Claude, Jr.	W.Va.
Hewitt, Paul Walter		B.A.E. 1952, West Virginia University	
Hewitt, Clifford Adelbert	Md.	Hill, Suzanne Doane	Va.
Ph.D. 1937, Columbia University	Va.	Hill, Vienna Elizabeth Daniell	W.Va.
Heyman, Betty Ruth		Hill, Thelma Pauline	Ind.
Heymans, Richard Gordon	Ill.	Hillebrand, Herbert Walter	Md.
B.S. 1951, Kansas State College of Agriculture and Applied Science	Kans.	A.B. 1944, Elmhurst College	
L.L.B. 1954, Washburn University of Topeka		B.D. 1945, Eden Seminary	
Herwood, Robert Monroe		Hiller, William Eugene	D.C.
B.S. 1950, University of Wisconsin	Wis.	B.S. 1949, Tulane University	
Hibner, Rodney Charles		Hillery, Edward Alton	D.C.
B.S. 1950, Springfield College	Pa.	Hilliard, Glenn Schwartz	Va.
Hickey, Glen Allen		Hilliard, Mary Wilson	Pa.
B.S. 1950, Western Kentucky State Teachers College	Md.	Hilliard, Mary Wilson	Va.
Hickey, Laurence Byrne		Hillier, Grant Gilbert	
Hickman, George Boaz	D.C.	A.B. 1942, University of Wisconsin	
Hickman, Joseph Thomas	Va.	Hill, Walter Gerard	N.Y.
A.B. 1952, Harvard University	D.C.	B.D.S. 1944, Marquette University	
Hicks, Honore Edward	Miss.	Hillstrom, Wilfred Bernard	Kans.
Hicks, Robert Waverly		B.F.E. 1950, Kansas State College of Agriculture and Applied Science	
Hicks, Wilbur Stewart	D.C.	Hilsenrath, Joseph	D.C.
Hickox, Lida Jane	Conn.	Hiltschille, Marilyn	D.C.
Hickory, Tal Gordon	Fla.	Hiltschille, Sarah Jane	D.C.
A.B. 1950, University of Kansas	D.C.	Hiltschille, Stephen Barthold	Md.
Hienrich, James Glenn	D.C.	A.B. 1951, Lafayette College	
Hiers, Clifford William		Hilson, Andrew Casson	Miss.
Hiers, Robert Eugene	Va.	A.B. 1952, University of Maryland	
Hiers, Philip Lee	Ill.	Hin, Shui Tong	D.C.
Hiers, Veda Jane	D.C.	Hines, Joseph Francis	Pa.
Hinchbaum, Charles A.	Va.	Hinsman, Frances Virginia	Md.
Hinchman, Thomas Patrick	D.C.	A.B. 1945, Vanderbilt University	
Hinchman, Charles Oakley	Md.	Hinsman, Ruth Naomi	Va.
Hine, Darrell Jean	Ohio	Hins, Thomas Laurman	Mass.
Hine, Joe Benton	Va.	B.S. in F.E. 1940, Harvard University	
Hight, Clarence Brainard, Jr.	Va.	Hins, Dorothy Jean	D.C.
Hight, Lida Adama	Fla.	A.P. 1951, The George Washington University	
Hiear, Arthur Gilbert	Va.	Hins, Marion Carolyn	Va.
A.B. 1950, East Nazarene College	Va.	Hinsman, Gorge Danieland	D.C.
Hiebert, Fred George	Pa.	Hinsman, Barbara Louise	Cat.
A.B. 1951, Syracuse University	N.Y.	Hins, Carl Fuller	D.C.
Hill, Agnes Estelle		Hins, John Humesworth, Jr.	D.C.
Hill, Albert Daniel	Md.	Hins, Jesse Ouzie, Jr.	Va.
Hill, Alma Felling	Va.	Hins, George Dawson	D.C.
A.B. 1951, The George Washington University	Colo.	Hins, Arthur Havers	D.C.
Hill, Betty Mosier		L.L.B. 1942, National University	
Hill, Betty Ruthing		Hins, Peter William	Md.
Hill, George M. Coffey	D.C.	Hins, George Cyrille, Jr.	W.Va.
Hill, Charles Albert	Va.	A.B. 1952, Grove City College	
B.S. 1942, U.S. Naval Academy	Va.	Hironaka, Henry	Md.
Hill, Paul Donaldson	D.C.	Hirsch, Charles Eldon	D.C.
Hill, Frances Delores		Hirsch, Rudolf Ernest	D.C.
Hill, Carl Brown	D.C.	A.B. 1950, Swarthmore College	
Hill, James Douglas	Miss.	Hirschfeld, Kenneth	N.Y.
Hill, James Merwyn	W.Va.	Hisc, James Clerk	Ill.
	Va.	A.B. 1947, University of Illinois	
		L.L.B. 1951, The George Washington University	

Hise, William Curtis A.B. 1948, A.M. 1949, University of Illinois	Ill.	Hogan, John Edward A.B. 1954, University of Minnesota	Ill.
Hishmeh, John Jacob B.S., A.B. 1952, Georgetown University	D.C.	Hokan, Walter Thomas, Jr. Hogewind, Cornelia Johanna A.B. 1947, Smith College	D.C. Va.
Hitchcock, Barbara Singley A.B. 1943, Barnard College	Md.	Hogg, James Henry B.S. 1927, U.S. Naval Academy	Wyo.
Hitchcock, Emily Joanne Hitchcock, Mary Leffingwell	D.C. D.C.	Holben, Donald Eugene B.S. 1945, U.S. Naval Academy	Va. M.J.
Hitchcock, Miriam Rebecca Hites, Zebolon Weaver	Pa. D.C.	Holben, Donald Russell Holbrook, Thomas Stanley Scofield B.S. 1948, University of North Carolina	Calif. Tenn. Va.
Hix, William Randolph Hibbs, Julius George A.B. 1929, Gettysburg College	D.C. Md.	Holcombe, John Tyler Holder, Edith Gwendolyn Holder, Richard Joseph Holderness, Robert B.	D.C. Va. D.C.
Ed.M. 1949, Johns Hopkins University	N.J.	Holdowsky, Simon A.B. 1930, Brooklyn College	Ala. Va.
Hlusko, William, Jr. Ho, Duane Afina Hoare, Harold A.B. 1948, LL.B. 1950, University of Michigan	Md. Mich.	Hollsambeck, Sam Holford, Donald Lloyd A.B. 1946, University of Virginia	Va. Va.
Hoban, John Charles B.S. 1948, University of Scranton	Va.	Holford, Mildred Anne Holland, Harrison Melsher A.B. 1944, University of Washington	D.C.
Hobbs, Alfred John A.B. 1950, American University	Md.	A.M. 1949, Columbia University	D.C.
Hobbs, Edward Victor Hobbs, Herman Hedberg B.S. 1953, The George Washington University	Md. Va.	Holland, Lillian B.S. 1946, Pennsylvania State Teachers College	D.C. Va.
Hobbs, Lillian Ethel Hobbs, Marie Louise B.S. 1944, Radford College	Va. Va.	Hollebeck, Joan Geneva Hollenberg, Richard Alvin A.B. 1951, The George Washington University	N.Y.
Hobbs, Richard Huntington B.M.E. 1952, The George Washington University	D.C.	Holler, Norbert Philip B.S. 1950, College of the City of New York	Idaho
Hobbs, Robert Mack Hubday, Vincent Nelson B.C.E. 1953, The George Washington University	Md. D.C.	Holley, Elmer Leroy A.B. 1952, Brigham Young University	Fla.
Hochman, Mark Nelson Hoddinott, Richard LaMar B.S. in M.E. 1949, University of Maryland	D.C. Md.	Holley, John Calvert, Jr. A.B. 1952, Vanderbilt University	Va. Va.
Hodge, Anne Lucille Hodge, Clarence Hardman Hodge, Doris Jeanetta Hodges, Betty Florence	D.C. Calif. D.C. Tenn.	Holliday, Donald Drake Holliman, William Jelks, Jr. Hollingsworth, John Allen A.B. 1951, University of Virginia	Va. Md. D.C.
Hoefer, Bruce Reginald B.S. 1946, U.S. Naval Academy	N.Y.	Hollingsworth, Margaret Helen Hollinshead, Ariel C. A.B. 1951, Ohio University	Va.
Hoefer, Ernst, Jr. B.S. 1941, U.S. Naval Academy	N.Y.	Hollister, Margaret Hayes A.B. 1939, Wellesley College	Tenn. D.C.
Hoehn, Roberta Mae Hoff, Hubert Jack Hoff, Mary Elisabeth B.S. 1927, Arnold College A.M. 1940, Temple University	D.C. D.C. Md.	Holloway, Gordon Hull Holloway, Mary Frances Holly, Barbara Sue Holm, Beatrice Hamlin Holm, Theodore Burton Holman, Herbert Harlan B.S. in Ed. 1952, University of Florida	Va. Va. Va. Fla. Texas Ga. Ohio Ky. Mo.
Hoffeld, Donald Raymond Hoffer, William Brickhead Hofflund, Paul A.B. 1950, Princeton University	D.C. D.C. D.C.	Holman, Mary Alida Holman, Mavis Elizabeth Holmes, Deborah Ann Holmes, Sydney Shaw Holmgren, John Casimer, Jr. B.S. 1953, University of Missouri	Va.
Hoffman, Arthur Daniel Hoffman, Clarice Clark Hoffman, Drexel Dean Hoffman, Richard Manning Hoffman, William Alexander Hoffman, Yvonne F. Hogan, Edward Leo A.B. 1947, LaSalle College	Va. Md. Ohio D.C. Va. D.C. Md.	Holober, Melvin Charles A.B. 1940, The George Washington University	Va.
Hogan, James Curnan Hogan, Jeanne Wygant A.B. 1943, University of North Carolina	Pa. Md.	Holst, Arnold A.B. 1951, University of Virginia	Ohio. Idaho Ill.
Hogan, Joan Marie	D.C.	Holt, Cletis Leon Holt, Dean Arthur Holt, Kenneth Clifford Holt, Martha Lucretia A.B. 1951, Bennington College	Maine

Holt, Nadine Richmond B.S. 1948, University of Maryland	Va.	Horan, James Michael B.S. 1916, Fordham University	N.Y.
Holt, William Harry	D.C.	Horenstein, Ruth Louise	D.C.
Holton, Arthur Patrick Ph.B. 1928, University of Notre Dame	Mich.	Hornuchi, Harold Shiegeo	Md.
Holton, Marian Louise	Pa.	Horn, Carroll Milton	Va.
Holz, Catherine A.B. 1945, University of Wisconsin	Oreg.	Horn, Henry Joseph B.S. in E.E. 1941, Lehigh University	D.C.
Holtzer, James Anthony	Pa.	M.D. 1950, The George Washington University	
Holtzger, Susan Marilyn A.B. 1951, Pennsylvania State College	Pa.	Horne, Philip Scott	N.H.
Holtzinger, John Edward, Jr. B.S. 1950, Pennsylvania State College	Pa.	Horner, Edward Moon B.S. in P.E. 1954, New Jersey State Teachers College, Trenton	N.J.
Holtzman, Herbert Miley, Jr. A.B. 1951, The George Washington University	Va.	Horning, Ross Charles A.B. 1948, Augustana College A.M. in Govt. 1952, The George Washington University	Va.
Holup, Deana Maniatis	D.C.	Hornshy, William Paul	Ala.
Holup, John Frank	Va.	Hornstein, Ida Edith B.S. 1949, The George Washington University	D.C.
Holup, Joseph John	Pa.	Horowitz, Alan Burton	N.Y.
Holzman, Selma S. A.B. 1955, Wellesley College	Pa.	Horowitz, Bruce Gordon A.B. 1950, Harvard University	Calif.
Holzman, Sanford Jules B.S. in M.E. 1946, University of New Mexico	Md.	Horowitz, Emanuel B.S. 1948, College of the City of New York	D.C.
Hom, Mary Jeanne B.S. in Ed. 1950, Kent State University	Md.	Horowitz, Eugene Gary	D.C.
Homer, Mary Elizabeth A.M. in Ed. 1952, The George Washington University	Ohio	Horowitz, Milton Arthur	Md.
Honabach, Patricia Lee	Ohio	Horstman, John Francis	N.Y.
Hone, Elmer Wilson	Va.	Horton, Pauline Brooks A.B. 1911, McKendree College	D.C.
Hone, Robert E. A.B. 1915, LL.B. 1918, Columbia University	Maine	Horton, John Aiken, Jr. B.S. 1914, U.S. Naval Academy	S.C.
Honeywell, Donald Malvin	Md.	Horton, John Brock	D.C.
Huck, Joseph Joel	D.C.	Horton, Richard Edward	Md.
Hoobler, Jerry Ellison	D.C.	Horvath, Elizabeth Ann	Va.
Hood, Bobbie Jo	D.C.	Hoskins, Harold Bones A.B. 1917, Princeton University	N.Y.
Hood, Suzanne Filene	D.C.	Hoskins, Shirley Ann	Va.
Hoover, Judith Stevens	Md.	Hosmer, Merrill James B.S. 1951, American International College	Va.
Hooks, Elizabeth Price	Mich.	Hoss, Robert John	Fla.
Hopper, Melvin Dale	Ark.	Hotherhall, Eugenia Lockhart	D.C.
Hopper, Charles Dallet B.S. 1951, Haverford College	D.C.	Hotredt, Donald Ashton	Wis.
Hoover, Richard Charles B.S. 1949, Yale University	Md.	Hottel, Robert Roy	D.C.
Hoover, Roland Armistage	Pa.	Hough, Robert Clifton	Md.
Hoover, Wallace Anker A.B. 1944, American University	Ohio	Hough, William Leo B.S. 1948, Pennsylvania State Teachers College, Shippensburg	Pa.
Hoover, William Kenneth A.M. 1949, The George Washington University	Md.	Houghton, Helen Huerst A.B. 1949, Mary Baldwin College	Va.
Hopkins, David Stephen A.B. 1950, Wabash College	Minn.	Houghton, Ray Brett B.S. 1949, Newberry College	Md.
Hopkins, Albert Eskine B.S. 1946, Auburn College	Ala.	Houghton, Richard Ayer B.S. 1942, Harvard University M.B.A. 1948, University of Michigan	N.H.
Hopkins, Nancy A.B. 1925, West Virginia University	Md.	Houk, Vernon Neal	Calif.
Hopkins, Ralph I.	W.Va.	Houlihan, Mary Ellen A.B. 1936, Smith College	N.H.
Hope, Carol Jean	W.Va.	House, Lawrence Samuel	Md.
Hopper, Henry Pearson B.S. in Ed. 1951, M.S. in Ed. 1934, University of Pennsylvania	Md.	House, Margaret Irene	Va.
Hopper, Richard Ned A.B. 1950, Bridgewater College	D.C.	Houston, Robert Joseph A.B. in Govt. 1955, The George Washington University	Md.
Hopper, Thomas Bradford, Jr. A.B. in Govt. 1955, The George Washington University	Va.	Hovey, Egil L. A.B. 1939, North Dakota State Teachers College, Minot	Minn.
Hoppmann, Kurt Heinz	D.C.	Howard, Fred Steven	Md.
	Va.	Howard, Fred William, Jr.	Calif.

Howard, James G. L., Jr.	Md.	Hughes, Marianne	
A.B. 1931, University of Maryland		Hughes, Thomas Emory	
Howard, Jay William	D.C.	A.B. 1946, St. Mary's Seminary and	
Howard, Sidney H.	Md.	University	S.C.
A.B. 1935, The George Washington		Hughes, Thomas Herbert	Va.
University		Hughitt, Jerry Keele	D.C.
Howard, William Reed	Nebr.	Hui, Peter Sui-Pui	D.C.
Hower, Murray Louis	D.C.	Hsu, Shui Tong	China
Howe, Dennis Herbert George	D.C.	Hui, Wing Yam	
Howell, Frances Dodd	D.C.	A.B. 1955, The George Washington	
A.B. 1951, The George Washington		University	D.C.
University		Hulbert, Eleanor Ruth	Va.
Howell, James P.	Kans.	Hulsh, Harriett	
Howell, Mary Belle	W.Va.	A.B. 1953, The George Washington	
A.B. 1945, Shepherd College		University	Va.
Howell, Mary Joseph	Md.	Hulsh, Jane Pennington	D.C.
Howes, Rodney Warren	D.C.	Hulsh, Joan Spafford	N.Y.
Howze, Elizabeth McNichol	Md.	Hulings, Hazel Marjorie	D.C.
B.S. 1947, Pennsylvania State Teachers		Hill, Grace Lonne	Pa.
College, West Chester		Hulley, Althea Isabelle	
A.M. in Ed. 1951, The George		Hulley, James Pierre	
Washington University		B.S. 1924, U.S. Military Academy	
Hoy, Ruth Yap	Va.	A.M. in Ed. 1951, The George	
A.B. 1921, A.M. 1925, University		Washington University	D.C.
of Hawaii		Hulley, John Charles Lincoln	D.C.
Hoyte, John Everett	Mass.	A.B. 1946, Harvard University	
Howme, Lucile Eleanor	Iowa	Hulsey, Judson Dowling	
B.S. 1955, M.E. 1953, The George		B.E.F. 1951, The George Washington	Calif.
Washington University		University	Va.
Hoyt, Harry Edward	Mass.	Humfeld, Clara Jeannette	D.C.
Hoyt, John Stanley	Va.	Hummel, Marjorie Louise	D.C.
B.M.E. 1948, Syracuse University		Humphreys, Harriett Lee	Md.
Huang, Dick	D.C.	Humphreys, Frank Ray	
Hubbard, Barbara Fitch	Va.	Humphreys, Howard M.	D.C.
Hubbard, Bruce Anthony	Md.	B.S. in M.E. 1938, Purdue University	D.C.
Hubbard, Charles Harold	D.C.	Humphries, Harold Rudolph	
Hubbard, Ruth Dennis	D.C.	Hung, Ching Chong	D.C.
Hubner, Cathryn	Pa.	A.B. 1927, San Diego State College	
Husak, Joseph S.	Md.	A.M. 1930, Columbia University	Va.
Huddle, William David		Hung, Wellington	D.C.
A.B. 1952, Western Maryland College		B.S. 1953, American University	Va.
Hudgins, Richard Scott	Va.	Hunley, William Henry	Va.
Hudnell, Maisie Oliver	Va.	Hunt, Anne Butler	Conn.
A.B. in Govt. 1947, The George		Hunt, James Galloway	Pa.
Washington University		Hunt, John Chelsea	D.C.
Hudson, James Matthew	W.Va.	Hunt, John Stephen	Md.
A.B. in Govt. 1950, The George		Hunt, Lucille K.	
Washington University		Hunt, Richard Coulter Drum	D.C.
Hudson, Jerry Ray von	Fla.	B.S. 1930, U.S. Naval Academy	D.C.
Hudson, John Frederick	Md.	A.M. 1950, University of Pennsylvania	Pa.
A.B. 1951, The George Washington		Hunt, Russell William	
University		Hunter, Isaac Roy	Calif.
Huey, Robert Carter	D.C.	Huntley, Barbara Drew	N.J.
Huff, Edward Martin	N.Y.	A.B. 1949, Hood College	
Huff, Joyce Evelyn	D.C.	Huntwork, Bruce Leslie	Pa.
Huff, Shirley Frances	Ill.	Hunziker, Frederick John	D.C.
Huffman, Richard Myall	Md.	B.S. 1949, Tufts College	D.C.
A.B. 1951, Haverford College		Hurd, John Richard	Md.
Hughes, Barbara Marie	D.C.	Hurd, Marjorie Kathryn	N.Y.
A.B. 1953, The George Washington		Hurlburt, Ward Bullard	
University		Hurley, Charles Warren	Va.
Hughes, Edward James	Pa.	Hurley, Denis Michael	
Hughes, Elizabeth Margaret	Pa.	A.B. 1953, Manhattan College	D.C.
Hughes, Ellen Claire	D.C.	Hurley, James Manning	Va.
Hughes, Fabian Sebastian	D.C.	B.S. 1946, St. Vincent's College	Mo.
A.B. 1950, St. Mary's University		Hurst, Sarah Lou	N.J.
Hughes, Henry Franklin	Md.	Hurst, Susan Emily	
Hughes, James Earl	Va.	Hurst, Thomas Orlando, Jr.	
Hughes, James Henry	Md.	Hurt, James Mitchell	
A.B. 1950, New York University		A.B. 1950, West Kentucky State	Md.
Hughes, John Nelson	Iowa	Teachers College	
B.S. 1951, U.S. Naval Academy		Harwitz, Gerald Quincy	

Students Registered

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Hurwitz, Sheldon B.S. 1952, L.L.B. 1953, University of Buffalo	N.Y.	Indorf, Frederick Anderson B.S. 1948, University of Missouri	Mo.
Hury, Pauline Martha A.B. 1941, University of Minnesota	Conn.	A.M. in Ed. 1949, The George Washington University	
Huser, Andrew	Minn.	Infosino, Carmelo John A.B. in Govt. 1951, The George Washington University	N.J.
Huston, Edward Eugene	Va.	Ingalls, Huntley Hampton	Md.
Husted, Priscilla	D.C.	Inglis, Anthony	D.C.
Husten, Robert Cameron	D.C.	Ingold, Raymond Edwin	Va.
Hutchinson, George Edward A.B. 1951, The George Washington University	Va.	Ingram, Anne Sue	D.C.
Hutchinson, Joseph Raymond Berry, Jr.	D.C.	Ingram, Augusta	D.C.
Hutchinson, Ruth Murphy A.B. 1926, University of California at Los Angeles	Va. Md.	Ingram, Lorraine Fay	Va.
Hutchinson, Ava Lee		Ingram, Ralph Lindsay, Jr.	Va.
Hutchinson, Don McNab	D.C.	Ingvalson, Dorna Mae	Va.
Hutchinson, Jeanne Westwood	D.C.	Innoc, Joseph Kenneth B.S. 1948, Davidson College	N.C.
Hutchinson, Mary Page A.B. 1951, Agnes Scott College	Ark. Va.	Innoc, June Virginia A.B. 1951, The George Washington University	D.C.
Hutchinson, Robert Newman		Ionno, Joseph Anthony A.B. 1951, The George Washington University	Conn.
Hutton, Barbara Louise	Md.	Iovino, Charles Anthony, Jr. A.B. 1952, The George Washington University	D.C.
Hutton, Wallace Eugene A.B. 1950, Indiana University	D.C. Md.	Ippolito, Luciano	Md.
Huxley, Eleanor Kann	D.C.	Ireland, Ana Evelyn A.B. 1948, A.M. in Ed. 1941, The George Washington University	Ind.
Huyer, Richard Gerard	N.Y.	Ireland, Clara Reilly	Ohio
Hysel, Anne	Fla.	Ireland, Henry Maxey, Jr.	Ga.
Hysel, Inger Hayden	D.C.	Ireland, Richard James	N.Y.
Hyatt, Neal Lorenzo	D.C.	Ireland, William Byron B.S. 1952, Ohio State University	Ohio
Hyatt, George Rutland B.S. 1952, Brigham Young University	Idaho	Irlbacher, John Michael	N.Y.
Hyde, James Richard B.S. 1952, Georgetown University	Va.	Irvin, Emory Wayne	N.C.
Hyde, John Michael		Irvin, Margaret Catherine	Colo.
Hyman, Richard Arthur	Del.	Irvine, Eleanor Hood A.B. 1947, Cornell University	N.Y.
Humowitz, Shirley L.	D.C.	Irvine, Harry Wuldee, Jr.	Md.
Hunt, Paul Allen	D.C.	Irwin, Gratton George, Jr. A.B. 1947, West Virginia University	W Va.
Hunt, Robert Edward	N.Y.	Irwin, Lafayette Key B.M.E. 1949, University of Alabama	Va.
Husell, Lloyd Lamar	Md.	Irwin, Willis Layne B.S. 1951, Grove City College	Pa.
		Isaac, Oakley Goodman	D.C.
I		Isaacs, Russell Harold	Va.
Iacimini, Nilo Francis	D.C.	Isaminger, Melvin James	D.C.
Iandolo, Angelo John B.S. in P.E. 1951, The George Washington University	D.C.	Isavvitz, Alvin I. A.B. 1950, Pennsylvania State College	Pa.
Icenhower, David Edward B.S. 1949, University of Toledo	D.C.	Isenack, Francis Raymond LL.B. 1950, University of Pennsylvania	
Idone, Leon Sumner M.P.H. 1947, University of Michigan	Md.	Isenack, Francis Raymond	Md.
Idolbar, John Joseph	Md.	Israel, Martine Samuel	Va.
Izrael, Alexei Sergeevich	D.C.	Israel, Thomas Sewell A.B. in Govt. 1952, The George Washington University	Md.
Izue, William Franklin, Jr.	Va.	Itnyre, Edwin Reeler A.B. 1957, The George Washington University	Md.
Izue, Katherine Anna A.B. 1930, University of Wisconsin A.M. in Ed. 1950, The George Washington University	Ohio	Ivanusa, Paul	D.C.
Ill, Charles Ludwig A.B. 1949, Brown University	Va.	Iverson, Donald Bernard	S.D.
Imberg, Jerome M.D. 1945, University of Richmond	Va.	Izawa, Edward Humdu A.B. 1951, University of Texas M.S. 1952, University of Hawaii	Hawaii
Imre, Mary Brookings B.S. 1944, Northwestern University	Va.		
Imre, Walter Curtis B.S. 1946, Rhode Island University	Va.	J	
A.M. 1949, American University	Va.	Jabbur, Sammy Khalil	Syria
		Jablon, Thelma Berger A.B. 1948, Hunter College	Va.
		Jablonski, Stanley	Va.

Jacinto, Joseph Patrick	N.Y.	James, Charlotte Miles	Va.
Jack, John Archibald	D.C.	James, Festus Burrell	D.C.
Jackapino, Anthony Frank	N.J.	James, Karl Kenneth	Md.
Jackson, Algernon Wilmer	Va.	James, Louis Ritchie	N.Y.
Jackson, Andrew	D.C.	A.B. 1950, Washington College	
A.B. in Govt. 1942, A.M. in Govt.		Jannace, James Rinaldo	Md.
1951, The George Washington		B.S. 1954, Fordham University	
University		Jana, Fred Carl, Jr.	Va.
Jackson, Ann W.	D.C.	B.S. 1951, University of Maryland	
Jackson, Anzville, Jr.	Va.	Jansen, Jane Ruth	Va.
B Met Eng. 1950, Virginia Polytechnic		B.S. 1949, University of Tennessee	Ill.
Institute		Jansen, Wallace Brooks	
Jackson, Catherine	Va.	Jantzen, Blanche Lucy	D.C.
Jackson, Charles Edgerton, Jr.	Md.	B.S. 1946, St. Louis University	Va.
B.S. in Eng. 1945, U.S. Naval Academy		Jara, Etelvina	Inda
B.M.E. 1951, The George Washington		Jaracz, Cecilia Katherine	
University		Jariwala, Praveen Kantilal	D.C.
Jackson, Edwin Wilford	Calif.	B.S. 1946, University of Bombay	
A.B. 1952, Occidental College		Jarrett, Joyce Dodson	R.I.
Jackson, Erwin Shaw	Tenn.	A.B. 1950, Carson Newman College	Conn.
B.S. 1942, U.S. Naval Academy		Jarvis, Arthur Bradley	
Jackson, Fern Gotsde	D.C.	Jaskiewicz, Leonard Albert	Conn.
A.B. 1945, Berea College		A.B. 1949, University of Connecticut	D.C.
Jackson, Frank Hulbrook	Md.	Jaskiewicz, Ruth Lalor	
B.S. 1939, University of Maryland		Jaszenko, Kiril	
Jackson, Harold Leo	Calif.	LL.B. 1945, University of Belgrade,	
B.S. 1952, California Institute of		Yugoslavia	D.C.
Technology		Jaynes, Franklin Harvey	Va.
Jackson, Nelson Parkyn	Texas	Jayons, Harry	D.C.
B.S. 1933, U.S. Military Academy		B.S. 1951, Madison College	N.I.
Jackson, Raymond Andrew	N.Y.	Jeffrey, Charles Thomas	Md.
Jackson, Robert James	N.C.	Jeffries, Thomas Richard Christm	D.C.
Jackson, Robert McClelland	Mass.	Jelland, Winifred Morgan	Md.
Jackson, Virginia Thornton	Texas	Jelly, Joan Elizabeth	
Jackson, Wade Munby	Md.	Jemison, Mae Stallings	Iowa
A.B. 1947, William Jewell College		A.B. 1946, Louisiana State University	
Jacob, Fred	N.Y.	Jenkel, Albert Arthur	
B.F.E. 1948, College of the City of		A.B. in Govt. 1953, The George	Va.
New York		Washington University	Va.
Jacob, Phyllis Eileen	D.C.	Jenkins, Gladys Marguerite	Fla.
A.B. 1942, The George Washington		Jenkins, Henry Bertrice	Fla.
University		Jenkins, Henry Carl	
Jacobs, George Joseph	Md.	Jenkins, John Heyward	D.C.
A.B. 1944, University of Mississippi		B.C.E. 1948, The Citadel	Va.
M.S. 1947, West Virginia University		Jenkins, June	D.C.
Jacobs, James Wesley	Md.	Jenkins, Sumner Parnell	Mo.
B.S. & P.E. 1949, A.M. in Ed. 1952,		Jenkins, Edward Paul, Jr.	
The George Washington University		Jenkins, James Charles	D.C.
Jacobs, Julius	W.Va.	LL.B. 1950, Kansas City University	Va.
B.S. 1951, Shepherd College		Jenkins, Stanley Noel	
Jacobs, Lydia Southland	D.C.	Jennings, Harold Walter	Va.
Jacobsen, Bernice Harriet	Wis.	B.B. 1938, University of Wisconsin	Utah
B.E. 1947, Wisconsin State Teachers		Jensen, David Elden	
College, River Falls	Wis.	Jensen, Homer Mark	Vt.
Jacobsen, Merriam J.	N.Y.	A.B. 1952, Brigham Young University	N.Y.
Jacobsen, Ralph		Jerd, Beverly	
A.B. 1950, New York University		Jerge, Charles Richard	Wis.
Jacobson, Bebe Aubrey	N.Y.	B.S. & Ed. 1951, State University of	
Jacobson, Elizabeth	Neb.	New York	
Jacobson, Paul Irvine	Mch.	Jermstad, Ronald Hudson	
B.S. 1951, Michigan College of Minne		B.S. 1948, Wisconsin State Teachers	D.C.
sota and Technology		College, Superior	Va.
Jacobson, Robert John	N.H.	Jerman, Frances Caroline	N.Y.
A.B. 1954, St. Anselm's College		Jerman, Jose Branscomb	N.Y.
Jack, Paul Rene, Jr.	Md.	Jermamas, Jean	Va.
B.S. 1950, University of Maryland		Jessome, Joseph	Mch.
Jaeger, Dorothy I.	Va.	Jewell, Adrian Forrest	
Jaeger, Harold Edward	Va.	Jewell, Jack Jay	Pa.
A.B. 1950, Western Reserve University		B.S. in F.E. 1951, Tri State College	
Jeger, Marion Olive	Va.	B.S. 1950, University of Pittsburgh	
Jencke, Walter Karl	Va.		
Jellen, Edward Lawrence	D.C.		
James, Arthur John, Jr.	Va.		

Joardar, Grace A.B. 1910, University of Chicago A.M. 1912, California University	D.C.	Johnson, Richard Walkup A.B. 1950, University of Virginia	Va.
Jobe, Milton Lockwood	Va.	Johnson, Robert Edward	Iowa
Johnson, Claudia Stone	D.C.	Johnson, Thomas Page	Va.
Johnson, Annie	D.C.	Johnson, Ursula M. B.S. in Ed. 1940, University of Tennessee	Md.
Johnson, Barbara Sue	Va.	Johnson, Vernon Webster, Jr.	Md.
Johnson, Calvin Frederick	Va.	Johnson, William Edward, Jr.	D.C.
Johnson, Carey Kenyon B.S. 1950, Virginia Polytechnic Institute	Va.	Johnson, William Joseph	Pa.
Johnson, Carl Richard	D.C.	Johnson, William Lee	Fla.
Johnson, Carolina Virginia	Md.	Johnston, Elizabeth Lee	Va.
Johnson, Charles James B.S. in Forestry 1949, Montana State University	Idaho	Johnston, Joanna Carole	D.C.
Johnson, Charles Lloyd, Jr. B.E.E. 1952, University of Maryland	Md.	Johnston, Josephine Elizabeth	Pa.
Johnson, Clarence Bogle	Tenn.	Johnston, Marie P. B.S. in Ed. 1930, Superior State Teachers College	D.C.
Johnson, David Ivan	Va.	A.M. 1941, University of Wisconsin	Va.
Johnson, David Pierce, Jr.	Va.	Johnston, Mildred E.	Fla.
Johnson, Donald Kenneth	Va.	Jones, Robert Delano	D.C.
Johnson, Donald Victor	Ill.	Jok, Virginia Lee	N.Y.
Johnson, Duane Ann	D.C.	Joliet, Margaret Josephine	D.C.
Johnson, Douglas Richard A.B. & Grad. 1952, The George Washington University	Va.	Jolly, Mary Sivers	D.C.
Johnson, Edith Olene	Va.	Jones, Audrey Kyle	Iowa
Johnson, Edwin Joseph	D.C.	Jones, Anna Beth	D.C.
Johnson, Ernest Frederick	Pa.	Jones, Anne Dudley	N.C.
Johnson, Esther Marie	Va.	Jones, Aubrey Bennett, Jr.	N.J.
Johnson, Ethel Dorothy	Va.	Jones, Aubrey Harrison	Va.
Johnson, Ethel Irma	Va.	Jones, Bess Spangfield	Panama
Johnson, Eva M. A.B. 1949, A.M. 1951, The George Washington University	D.C.	Jones, Carmel Martha	D.C.
Johnson, Gloria Lorvina	D.C.	Jones, Catherine Edith	D.C.
Johnson, Grace Russell A.B. 1919, Wells College A.M. 1921, The George Washington University	D.C.	Jones, Charlotte Bovelio	Va.
Johnson, James Cullen, Jr.	Okl.	Jones, Chester Glenn	Pa.
Johnson, James Theodore	Mont.	Jones, Curtis Harvey A.B. 1950, M.B.A. 1952, Harvard University	D.C.
Johnson, James Walter	Md.	Jones, Dan Moody	Fla.
Johnson, James William	Tenn.	Jones, Darrell M. B.S. in Ed. 1949, Ed.M. 1950, University of Florida	Va.
Johnson, Jane Waldman A.B. 1951, The George Washington University	D.C.	Jones, Dorothy Hermann	Va.
Johnson, Joseph Darwin	Va.	Jones, Douglas Johnson A.B. 1951, Duke University	Va.
Johnson, John Ann	Md.	Jones, Edith Leach B.S. 1945, Longwood College	Va.
Johnson, Lee Farnum, Jr. A.B. 1941, University of Colorado	Va.	Jones, Elwin Murray	N.Y.
Johnson, Loren Nel	S.D.	Jones, George Edward	Va.
Johnson, Louis Earl	D.C.	Jones, George Jerome	Ky.
Johnson, Margaret Elizabeth	D.C.	A.B. 1951, University of Oklahoma	Md.
Johnson, Margaret Rae B.S. 1947, Mary Washington College	D.C.	Jones, Helen Glaeserli	D.C.
Johnson, Marion Meek A.B. 1919, L.L.B. 1950, University of Alabama	Va.	Jones, Horace Tildard, Jr.	Va.
Johnson, Marshall Peyton B.S. 1951, University of Maryland	Ala.	Jones, Isaac Thomas B.S. 1940, Pennsylvania State Teachers College, Bloomsburg	Md.
Johnson, Merton Bamer	Md.	Jones, John Marilyn	Mass.
Johnson, Naomi	N.Y.	Jones, Leonard Bernard, Jr.	Md.
Johnson, Nels Clarence B.S. 1931, U.S. Naval Academy	D.C.	Jones, Lou Perry A.B. 1917, University of Kentucky	Ga.
Johnson, Patricia Anne	Va.	Jones, Louis Roger	Calif.
Johnson, Patricia M. H. A.B. 1946, The George Washington University	Va.	Jones, Louis Winchester, Jr. A.B. 1949, Occidental College	D.C.
Johnson, Phyllis Ruth	Md.	Jones, Loydell	Guatemala
Johnson, Ralph Elliot	Va.	Jones, Marilyn Yvonne	Okl.
Johnson, Revley Wade	Pa.	Jones, Mark M.S. 1951, Massachusetts Institute of Technology	D.C.
Johnson, Richard Gibbs	D.C.	Jones, Martha Sue	Va.
		Jones, Mary Montague A.B. 1948, Hollins College	Pa.
		Jones, Norman William B.S. 1942, University of Scranton	D.C.
		Jones, Robert Christie B.S. A.B. 1950, University of Florida	

Jones, Robert Edward	Md.	Kagan, Miriam B.	N.Y.
B.S. 1951, University of Maryland		A.B. 1936, Hunter College	Pa.
Jones, Robert Houston	Mass.	Kahlbaugh, Richard Allen	
Jones, Robert Howard	Va.	B.S. 1952, Franklin and Marshall College	Va.
A.B. in Geol. 1955, The George Washington University		Kahn, Fritz Reiner	
Jones, Robert Tison	Md.	A.B. 1948, LL.B. 1950, The George Washington University	N.C.
Jones, Robert Williams	Md.	Kahn, Howard	Pa.
Jones, Theresa Ann	N.C.	A.B. 1940, University of North Carolina	
Jones, Thomas Hugh	D.C.	Kahn, Kalvin	Wn.
B.Ch.E. 1952, Mackay College of Mining and Technology		A.B. 1948, University of Pennsylvania	
Jones, Walter Severn	D.C.	Kahn, Marvin Sol	Calif.
Jones, William Harry	Maine	A.B. 1951, LL.B. 1953, University of Wisconsin	Md.
Jones, Henry Fred	D.C.	Kahoun, Wilbert Nathaniel	
Jordahl, Russell Nelson	Md.	Kahn, Hugh Randolph	
B.S. 1956, U.S. Naval Academy		B.S. 1948, Kent State University	D.C.
Jose, Brendan Thomas	Va.	LL.B. 1952, LaSalle College	
Joseluna, Robert Charles	N.Y.	Kain, Joseph	
Josephson, Gilbert C.	Md.	B.S. in I.E. 1949, Johns Hopkins University	D.C.
Joskowitz, Dora Helena	Mich.	Kaiser, Stuart Berwin	D.C.
Joslyn, Danforth	D.C.	A.B. 1918, Harvard University	
Joslyn, Mary Ann	D.C.	Kalaris, Angelo T.	Md.
Joyce, John Donald	Va.	B.S. 1951, Montana State University	Md.
Joyner, Cosley Randolph	D.C.	Kalausi, Jamie Swafford	
Judd, Charles Laverne	Ill.	Kalbaugh, Jack Charles	Pa.
Judd, Dean Burritt	Md.	B.S. 1952, Maryland State Teachers College, Frostburg	Ind.
A.B. 1951, The George Washington University		Kalen, Andrew Charles	N.J.
Judd, Kenneth C.	Va.	Kalinowski, Bernice Judith	D.C.
Judge, Stephen Ralph	N.Y.	Kalish, Robert Paul	Md.
Judson, Humphrey Francis, Jr.	Conn.	Kallis, Marian Eleanor	Md.
Judy, Earl Wilson	W.Va.	Kallmeyer, Roy Leslie	Pa.
B.S. 1950, West Virginia University		Kalman, Benjamin	D.C.
Judy, Selman Wade, Jr.	W.Va.	Kalson, Mildred Esther	
Juest, C. Jane	D.C.	Kaltwasser, Raymond A.	Ind.
A.B. 1947, Centre College of Kentucky		A.B. 1951, Grinnell College	Md.
Jubasz, Andrew Richard	Md.	Kamat, Jayant	Pa.
B.M.E. 1949, University of Buffalo		Kamenetz, Leonard	
Julian, Harry William	Md.	Kamm, Charles William	Ohio
Julius, Ellen Joan	D.C.	A.B. 1950, Wabash College	
Junsal, Raymond Wright	D.C.	Kane, Carol Paula	D.C.
B.M.E. 1949, The George Washington University		A.B. 1951, Western Reserve University	D.C.
Junco, Ida Mary	N.Y.	Kane, Daniel Raymond	Iowa
Junka, Ernest Miller	N.H.	Kane, Dorothy Mary	
B.M.E. 1950, University of New Hampshire		Kane, Eloise Frances	D.C.
Junkins, Philip Dexter	Ohio	B.S. 1952, Wilson Teachers College	Md.
B.M.E. 1951, Ohio State University		Kane, John Alfred	N.Y.
Justement, Louis, Jr.	Md.	Kane, John Francis	Md.
Justice, Alfred Smith	Va.	Kane, Mary Annet	
Justice, Bernard William	D.C.	Kane, William Matthew, Jr.	Kore
B.F.E. 1951, Catholic University of America		A.B. 1950, College of the Holy Cross	
Jwaideh, Patricia Jane	D.C.	Kang, Yung Kyoo	D.C.
Jyllika, Edward Walter	D.C.	A.B. 1952, Seoul National University	Ohio
B.S. 1951, The George Washington University		Kapellakis, Anne Alexander	D.C.
		Kapitan, Frank James, Jr.	Ill.
		Kaplan, Barbara Grace	Ill.
		Kaplan, Celia	
		Kaplan, Harry	D.C.
		A.B. 1948, A.M. 1952, The George Washington University	N.Y.
		Kaplan, Harvey Douglas	D.C.
		Kaplan, Jay E.	Va.
		Kaplan, Judith Anne	N.Y.
		Kaplan, Lillian Epstein	
		Kaplan, Nathan	
		B.S. 1950, College of the City of New York	Pa.
		Kapochus, Frank Albert	
		A.B. 1950, King's College	
Kaaret, Raymond Henry	N.Y.		
A.B. 1949, University of California			
M.P.A. 1951, New York University			
Kabatnick, Neil Bernard	Pa.		
B.S. 1950, University of Scranton			
Kabes, Lillian Esther	D.C.		
B.S. 1952, American University			
Kaboch, Delmar, Jr.	Va.		
Kachmar, Michael, Jr.	D.C.		
Kadul, Iem	Indo China		

Students Registered

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Kaplan, Linda Lothrop		Kay, Alan	Va
Kaplan, William George	Calif.	Kay, Jeanette Ruth	D.C.
Kapur, Krishan	D.C.	Kay, Marvin Stanley	D.C.
A.B. 1944, A.M. 1946, Punjab	D.C.	Kaye, Alfred Howard	N.J.
University, India		A.B. 1931, The George Washington	
Karabian, Dragan	D.C.	University	
Karabogian, Barbara Keeher	D.C.	Kaye, Isabelle Blanche	Md
Karabogian, Nicholas Demetrios	Md.	A.B. 1943, University of California	
B.E.E. 1951, The George Washington		of Los Angeles	
University		A.M. in Ed. 1953, The George	
Karabogian, Nicholas	D.C.	Washington University	
Karabogian, Nicholas V.	Mass.	Kaye, Miles Charles	Md
B.S. 1936, University of Massachusetts		Kaye, Robert Adolph	N.D.
Karabogian, Stanley Edward	D.C.	A.B. in Govt. 1948, A.M. in Govt. 1950,	
Karabogian, Konstantinos	D.C.	The George Washington University	
B.C.E. 1951, The George Washington		Kayser, Robert Radcliffe	Md.
University		Kayser, Ray John	Pa.
Karabogian, Nicholas John	D.C.	Keadle, Byron Waldo	W.Va.
Karabogian, Frank A.	D.C.	A.B. 1936, A.M. 1941, University	
Karabogian, Jesse Walton	D.C.	of Pennsylvania	
Karabogian, Ruth Flora	Va.	Keane, Charles Kenneth	D.C.
Karabogian, Elliot	N.Y.	Kearney, Anna Mary	Vt.
Karabogian, Joseph	D.C.	B.E. 1946, Vermont State Teachers	
L.L.D. 1944, Charles University, Prague		College, Castleton	
A.M. 1945, Free School of Political		Kearney, Janet Michael	N.Y.
Science, Prague		Kearney, Margaret Adele	Pa.
Karabogian, Lawrence	Va.	A.B. 1937, The George Washington	
B.S. 1947, University of Chicago		University	
Karabogian, Herbert Koro	Hawaii	Kearney, Edmonia Catherine	D.C.
B.S. 1950, University of Hawaii		A.B. 1936, Mount Union College	
Karabogian, Emma Ann	Pa.	Keas, Mary Ellen	Iowa
Karabogian, Joanna Viedt	D.C.	A.B. 1936, The George Washington	
Karabogian, Simon	D.C.	University	
Karabogian, Herman Naphthali	D.C.	Keating, Mary Dolores	D.C.
Karabogian, Morton A.	N.J.	A.B. 1941, The George Washington	
Karabogian, Richard deVean	Va.	University	
Karabogian, Julius Joseph	Mass.	Keaveney, Donald Charles	Md
B.S. 1942, Pennsylvania Military		B.S. 1947, Bowdoin College	
College		L.L.B. 1951, American University	
Karabogian, Joseph Anton	D.C.	Keck, Edwin William	Pa.
Karabogian, Mary John	D.C.	B.S. in Ed. 1948, Temple University	
Karabogian, Mary Ann	Pa.	Kee, Otton Eugene	Va.
Karabogian, Alex Jr	N.J.	Kee, Robert	Md.
B.S. 1951, Mississippi Southern College		Keegan, John Patrick	Va.
Karabogian, James	Va.	R.S. 1950, St. Lawrence University	
Katz, Isidore Jacob	D.C.	Keegan, Patricia M.	D.C.
Katz, Samuel	D.C.	A.B. 1944, The George Washington	
B.S. 1950, U.S. Naval Academy		University	
Katz, Sherman Aaron	Pa.	Keels, Pauline Alice	D.C.
A.B. 1940, University of Pittsburgh		Keele, Robert Lullius	D.C.
Kaufman, Albert Gerald	D.C.	Keele, Edward Shanon	Va.
Kaufman, Yolande Marie Therese	D.C.	Keele, Geraldine Conrad	D.C.
Kaufman, Duwayne Frederick	Md.	Keener, Mary Faye	Ala.
Kaufman, Harry	Pa.	A.B. 1940, University of Alabama	
B.S. 1950, Temple University		Keener, Ross Fulton Jr	D.C.
Kaufman, Richard Miles	Md.	Keeler, Max Borcham	D.C.
Kaufman, Roger Alexander	D.C.	Keefer, Charles Pace	Va.
Kaufman, Sidney	Conn.	Keener, Donald Bain	N.C.
A.B. 1951, A.M. 1953, The George		Keel, Herbert Bruce	Ill.
Washington University		B.S. 1950, College of William	
A.B. 1952, Washburn Municipal	D.C.	and Mary	
University of Topeka		Keilin, Charles David	D.C.
Kaufman, Ernest Frank, Jr	Md.	Keir, Margaret Louise	Md.
A.B. 1946, The George Washington		Keiser, Ray Edward	Md.
University		A.B. 1949, Miami University	
Kaufman, Gabriel	D.C.	Keith, Donald Burnett	D.C.
B.S. 1947, M.S. 1950, College of the		Keith, Jefferson Donald	D.C.
City of New York		B.S. 1951, University of Maryland	
A.M. in Govt. 1950, The George		Keithart, Raymond Edward	Kans.
Washington University		A.B. 1947, William Jewell College	

Kelchner, Marjorie Lucile B.S. 1941, Southeastern State College A.M. 1948, Colorado State College of Education	S.C.	Kemp, Irene R. Kemp, John Gordon Kemp, Katherine Lee B.S. 1941, St. Joseph's College, Md.	Ga. Ga. Md. D.C.
Kell, Frances J. E. Kellam, Donald Swift, Jr. A.B. 1952, The George Washington University	D.C. Va.	Kensady, Harold William Kendall, Ralph St. Clair B.S. 1944, Pennsylvania State College	D.C.
Keller, Eugenia B.S. 1947, Purdue University	D.C.	Kendrick, John A.B. 1948, Walla Walla College A.M. 1951, University of Washington	D.C.
Keller, George H. A.B. 1951, DePaul University	Va.	Kendrick, John Whitefield A.B. 1917, A.M. 1939, University of North Carolina	Va.
Keller, Harry Obed, Jr. A.B. 1949, Shepherd College	Va.	Kendrick, Wayne A.B. 1949, University of Virginia	Va.
Keller, Jean Claire Keller, Maurice	Va. Va.	Kennealy, John Fletcher Kenkel, Fern Bonaventure A.B. 1949, Colgate University LL.B. 1952, The George Washington University	Md. Md. D.C.
Keller, William Leonard LL.B. 1949, Southern Methodist University LL.M. 1953, The George Washington University	Texas	Kennan, Dana Ellwood Medlock Kennan, Richard Barnes, Jr. Kennard, Henry Hunter B.S. 1949, University of Virginia	Md. Md. D.C.
Kelley, Barbara Jean Kelley, Charles William Kelley, Colleen Nell Kelley, David Philip B.B.E. 1949, Lehigh University	Mass. D.C. D.C. D.C.	Kenneally, Cecilia Mildred B.S. in Ed. 1949, Boston University	Md. D.C.
Kelley, Helen Vivian Kelley, Melvin James Kelley, Patricia Lelandi B.S. in Ed. 1952, Massachusetts State Teachers College, Salem	D.C. Wis. D.C.	Kennedy, Claire Alvin, Jr. Kennedy, Frank Edward Kennedy, James Jarvis Kennedy, James Joseph A.B. in Govt. 1951, The George Washington University	Va. D.C.
Kelley, Paul Clinton A.B. 1941, Syracuse University	D.C.	Kennedy, Joseph Donovan B.S. 1948, College Notre Dame of Maryland	Va. N.Y.
Kelther, Mary Alice Claire Kellogg, Charles Flint A.B. 1934, Bard College	N.J. Pa.	Kennedy, Kathryn Kenny, Raymond Joseph B.Cl. Eng. 1940, University of Oklahoma	Va. N.Y.
Kellogg, Mary Margaret Kelly, Constance Anne Kelly, Dee J. A.B. 1950, Texas Christian University	Pa. D.C. Texas	Kent, Theodore Robert Kentopp, Keith Earl Kewen, Glendola Kepler, John Zehner B.S. 1949, Northwestern University	Utah N.Y. D.C. N.C.
Kelly, Elizabeth Anne Kelly, Elizabeth Cecelia Kelly, Elizabeth Graham A.B. in Ed. 1944, The George Washington University	D.C. D.C. D.C.	Kepley, Thomas Alvin B.S. 1950, North Carolina State Teachers College	Md.
Kelly, Eugene Raymond A.B. 1950, Dartmouth College A.M. 1952, University of Pennsylvania	N.Y.	Kepples, Richard E. A.B. 1950, University of Pittsburgh	D.C.
Kelly, James Dillard A.B. 1952, M.B.A. 1952, University of Michigan	Mich.	Kerakos, Van Angello Kerash, Burton A.B. 1952, The George Washington University	D.C. Va. D.C.
Kelly, James Edward Kelly, Joseph John B.S. 1949, Ohio University	D.C. Va.	Kerman, Phyllis Marilyn Kern, Charles Ellsworth	Va. D.C.
Kelly, Raymond Edward Kelly, Robert Clay LL.B. 1944, Washington University	Va. Mo.	Kern, Jean Adele Kern, John Prioleau Neger Kern, John Worth A.B. 1949, Princeton University	N.Y. Vt. D.C.
Kelly, Robert Wendell Kelman, Nathan Allen B.S. 1946, University of Maryland	Mass. D.C.	Kern, Kenneth Jay Kern, Tempie Christine Kern, Thomas Francis B.S. 1918, U. S. Military Academy	Wash.
Kelsey, David A.B. 1949, University of Rochester A.B. 1952, The George Washington University	Md. Md.	Kerr, Alex Arthur B.S. 1944, U. S. Naval Academy Kerr, David Renwick A.B. 1914, Columbia University A.M. 1952, The George Washington University	Va. D.C.
Kemmerer, John Lester Kemp, Emory Leland II B.C.E. 1952, University of Illinois	Pa. Ill.	Kerr, James Edwin A.B. 1950, University of Virginia	D.C.
Kemp, Henry Werner A.B. 1950, The George Washington University	Pa.		

Kerr, Kay Elizabeth A.B. 1945, Wellesley College	D.C.	Kimble, Gerald Wayne A.B. 1949, University of California	Calif.
Kerr, Lucile Minton B.S. 1936, Bowling Green State University	D.C.	Kimmerling, Richard William Kincaid, Robert Alexander B.S. 1938, Hampden-Sydney College	D.C. Va. Ill.
Kerr, Renwick Reeve B.S. 1940, Cornell University	Va. Pa.	Kinderman, Eugene Julian B.S. 1941, University of Illinois	Ill.
Kerr, Victor Harold Kernan, Thomas John B.S. 1941, Pennsylvania State Teachers College, Mansfield	Va. Va.	Kindley, Lee Murray A.B. 1942, Western Maryland College	Va.
Kerns, Timothy Daniel B.S. 1950, Randolph Macon College	Md.	Kindness, Gordon Robertson A.B. 1950, University of Maryland	Md.
Kesner, Irving Carl Kessler, Frances Gloria Kessler, Gary Kessler, Ralph Francis Kessler, Thomas Barry Kessler, William Harry Kessler, Marion Faye Kessler, Harry William Kess, Zella Cox Ketter, Arthur Seymour B.S. 1951, University of Pennsylvania	Va. D.C. N.Y. Md. Md. Pa. D.C. D.C. D.C.	Kindvatter, Victor H. A.B. 1941, Ph.D. 1942, University of Pennsylvania King, Bronson Smalley King, Charles Wesley King, Christopher Zuk King, Claude Herbert King, Elbert Craig, Jr. King, Elvina Frances A.B. 1951, The George Washington University	Pa. N.J. D.C. D.C. Ind. Va. N.Y.
Khan, Mohammad Salim A.B. 1948, University of Punjab	D.C.	King, Ernest Lee King, Ethel Virginia Anne King, Frank Henry B.M.E. 1951, Virginia Polytechnic Institute	D.C. Md. Md.
Khoury, Edward Michael Khoury, Della Marie Kibbe, Blanche Irene Kiser, Lillian Bees B.S. in Ed. 1943, University of Connecticut	Pakistan Md. Pa. Colo. Va.	King, George Morgan King, Henry H. Lung King, Henry Lord Page B.E.E. 1948, University of Kansas	Md. Md. Md.
Kirkline, William Henry, Jr. Kirkman, Abner Charles Kirkwell, Lois Allene Kitter, Myron J. Kitt, Frank Wilson A.B. 1949, University of Pittsburgh	N.J. D.C. Pa. D.C.	King, Herbert Graham, Jr. King, James Cecil A.B. 1949, A.M. 1950, The George Washington University	D.C. Pa.
Kitter, Robert Richard B.S. 1950, Bucknell University	Pa.	King, Jacette Mary A.B. 1952, Boston University	Mass.
Kirkman, Frank John Kirkman, Jean Camille Kirkby, Russell Sumner, Jr. Kirkby, Bernard Leo, Jr. A.B. 1954, The George Washington University	Va. N.Y. D.C. Md. Va.	Kiss, Joe Lee Kiss, Kathryn Kiss, Leon Herbert Kiss, Morton Lionel Kiss, Reta Marie Kiss, Robert Edgar, Jr. A.B. 1947, West Virginia University A.M. 1948, New York University	Ala. Ohio W.Va. D.C. Pa. Md.
Kirkby, Claude Edgar Kirkby, Margaret Ann A.B. in Ed. 1951, University of Chicago	Calif.	Kiss, William Richard Kissler, Robert Charles B.S. 1941, Northwestern University	Va. D.C.
Kirkman, Daniel Ford Kirkman, Ingeborg Sigrid Kirkby, M. V. Emma B.S. 1952, Drexel Institute of Technology	D.C. N.Y. D.C.	Kissner, Sheldon Harold B.S. 1941, U.S. Naval Academy Kissner, Richard Gareth Kissner, John William Kissner, Clarence Turner, Jr. B.S. 1951, American University	Calif. Neb. Ohio Va.
Kirkmer, Marion Flora Kim, Chon LL.B. 1961, University of Korea	D.C.	Kirkby, Thomas Anne Kirkby, Homer Hugh, Jr. A.B. 1950, The George Washington University	Md. D.C.
Kim, Hark Ginn LL.B. 1950, University of Korea	Korea	LL.B. 1953, University of Michigan	N.J.
Kim, Hyoung Han LL.B. 1949, University of Korea	Korea	Kirby, James Chasey, Jr. Kirby, John Joseph Kirby, Louis Carole Kirk, Michael James Kirk, Ray Holton Kirk, Richard B.S. 1952, University of Maryland	D.C. Va. D.C. W.Va. D.C.
Kimberly, Elizabeth Caldwell A.B. 1951, The George Washington University	Ohio D.C.	Kirkland, Robert Catey	Va.

Kirkley, William Joseph	Va.	Kline, Raymond Adam	Pa.
B.S. 1946, U. S. Coast Guard Academy		A.B. 1950, Lebanon Valley College	Va.
Kirklik, Michael	D.C.	Kline, Robert Charles	Md.
B.S. 1950, Pennsylvania State Teachers College, California		B.S. 1951, Pennsylvania State College	Va.
Kirner, Evelyn Leah	Md.	Kline, Robert Milton	Va.
B.S. 1950, Wilson Teachers College		Kline, Thomas Clayton	Calif.
Kirsch, Arthur David	Md.	Klinepeter, Donald Eugene	D.C.
Kirstbaum, Frances Marion	D.C.	B.S. 1952, Pennsylvania State College	D.C.
Kisson, Stanley Martin	D.C.	Kling, Victor John	D.C.
Kirwan, James Joseph III	N.Y.	B.S. 1949, Denver University	D.C.
Kischitz, Nicholas Michael	N.H.	Klitenic, Maxine Fouten	
B.H.E. 1947, University of New Hampshire		Klitenic, Simon	
Kishly, Georgianna Joan	R.I.	B.S. 1948, University of Maryland	Md.
Kisken, James Paul	D.C.	M.S. 1949, Municipal University of Wichita	D.C.
Kisken, Sandra Lee	Va.	Klopach, Helen Theresa	D.C.
Kittredge, George William	Maine	Klopman, Elias	
B.S. 1941, U.S. Naval Academy		Kloydahl, Gordon Jacob	
Kivell, Betty Beyer	N.Y.	Kluckhohn, James Henry	Md.
Kivell, Donald Wayne	N.Y.	B.S. 1951, Kent State University	N.D.
B.S. 1950, Northwestern University		Klutowski, Stanley Zenon	
Kizler, John Willis	Texas	A.B. 1948, University of Wisconsin	
B.S. 1949, Northwestern University		Knaul, Robert Clinton	Md.
A.M. in Govt. 1951, The George Washington University		B.S. 1941, U.S. Naval Academy	Ind.
Klaas, Harmon Albert	Md.	Knee, Roma Diana	Va.
Klaasse, Robert Allen	D.C.	Knight, Gerty Lloyd, Jr.	Md.
Klaenderman, Mary Josephine	Ill.	B.E.E. 1947, Purdue University	Va.
A.B. 1951, Catholic University of America		Knight, Katherine Hunsaker	
Klappa, Pete Patrick	Pa.	Knight, Marvin, Jr.	
B.S. 1951, University of Scranton		Knight, Merrill Donaldson III	W.Va.
Kleiman, Ansel	D.C.	A.B. in Govt. 1951, The George Washington University	
B.S. 1950, Ohio State University		Knipa, John Evers	
Klein, Charles Nicholas	Va.	A.B. 1934, Shepherd State Teachers College	
Klein, David Joel	D.C.	A.M. in Ed. 1942, The George Washington University	Md.
B.C.E. 1942, Cooper Union		Knippenburg, Ormond Frederick	Va.
Klion, Ernest Joseph	D.C.	Kniskern, Peter Marshall	Md.
Klion, George John	N.Y.	Knoche, Ernest Jacob	D.C.
Klion, Jack Gilbert	D.C.	Knoke, Franz Herman	
Klion, Johanna Marie	Md.	Knopp, Edna	Pa.
Klion, Maria	D.C.	A.B. 1943, Brooklyn College	
B.S. 1944, The George Washington University		Knorr, Francis George	N.J.
Klien, Robert Max	Va.	A.B. 1949, University of Pittsburgh	Va.
A.B. in Govt. 1949, The George Washington University		Knoth, Ronald Charles	
Kleinsmith, James Joseph	S.D.	Knott, Lancaster Benjamin	Md.
Kleinschuber, John Francis	Md.	A.B. 1952, St. John's College	
Kleiss, Julius Matthew	D.C.	Knotts, James Owen III	Mich.
Klomm, Warner Arthur	Utah	A.B. 1950, University of Maryland	
A.B. 1951, The George Washington University		Knowles, Myles Henry	
Kleschowski, Edward Theodore	D.C.	A.B. 1949, Michigan State College	D.C.
Kless, William Gregory	Minn.	L.I.B. 1952, The George Washington University	N.Y.
A.B. 1951, College of St. Thomas, Minn.		Knowles, Robert Clinton	D.C.
Kline, Ann Elizabeth	Va.	Knowlton, Lucia Mai	
Kline, Edward Samuel	Md.	Knox, Carl LeRoy	
A.B. 1948, University of Pennsylvania		Knox, Charlotte Hess	
Kline, Ira	N.J.	B.S. 1945, Temple University	Va.
B.S. 1948, American University		A.B. 1950, A.M. 1951, The George Washington University	D.C.
M.S. 1950, The George Washington University		Knox, David Kaywin	Va.
Kline, James Frederick	D.C.	Knox, David W.	Va.
B.S. 1951, The George Washington University		B.E.E. 1945, University of Florida	
Kline, Jay Drummond	Md.	Knox, George Williams	
Kline, Ralph Henry	Pa.	Knox, James Howard	Calif.
A.B. in Govt. 1951, The George Washington University		A.B. 1958, College of William and Mary	
		Knox, Paul Raymond	Va.
		A.B. 1950, University of California	Hawaii
		Knudson, James Ellsworth	
		Ko, Young S	
		B.S. 1953, American University	

Students Registered

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Kober, Harry Patrick	D.C.	Koski, Arthur Eugene	Mich.
Kocornik, Janet Lee	Conn.	B.S. 1943, Northern Michigan College	
Koch, George Price	Md.	Koski, Irma Rachael	Mich.
B.S. 1913, U.S. Naval Academy		Koski, Raymond James	D.C.
Kott, Stanley Allan	D.C.	Koshibayashi, Miyeko	Minn.
Koutler, Jessie	Va.	Kostin, Steven	Pa.
Kovara, Stephen	D.C.	A.B. 1951, University of Pittsburgh	
L.I.D. 1921, Charles University, Prague, Czechoslovakia		Kostka, Fred Paul	R.I.
Kodrowski, Dorothy Elizabeth	Pa.	B.M.E. 1942, University of Rhode Island	
Koehler, Dorothy Helen	D.C.	Kostka, Vera Vivian	Va.
Koehn, Shirley Ellen	Va.	Kotapish, William Robert	Mich.
Koehl, Helen Theresa	D.C.	A.B. 1950, A.M. 1951, University of Michigan	
Koenig, James Frederick	Calif.	Kotchek, Seymour	D.C.
A.B. 1949, University of California at Los Angeles		B.S. 1952, Temple University	
Kopp, Vera Shaplett	Va.	Kotler, Stanley	D.C.
A.B. 1949, Eastham College		Kotz, Herbert Louis	D.C.
Korbalmy, Erik Antal	D.C.	Kotro, Joseph Adam	Turkey
B.S. in Ed. 1951, Temple University	Pa.	Koustous, Gust George	D.C.
Kor, Ruth Miriam		Koutalidis, William Charles	Moine
Kor, Daniel Allen	D.C.	Koutras, George August	D.C.
Korras, Ruth Doris	D.C.	Koutras, Louis August	D.C.
Korshak, Eukiko	Japan	Kouzel, Samuel Isoun	D.C.
Korshak, M. Petter	D.C.	Kovacevich, Ari Milan	Ill.
Kolano, Anna Louise	Pa.	B.S. in Ed. 1955, Northern Illinois State Teachers College	
B.S. 1952, Pennsylvania State College		Kovacevich, Ruth Aslene	Ill.
Kole, Carl Bertal	Mich.	B.S. in Ed. 1945, Northern Illinois State Teachers College	
Kolman, Michael	Conn.	Kovach, Bernard Clement	Pa.
Kuener, Robert S.	N.J.	Kovacs, Frank Gabriel	Pa.
Kolonsa, Claire Bette	D.C.	Kovacs, Frank William	N.J.
Koike, Phyllis Agnes	D.C.	Kovarik, David Frank	Va.
Komenka, Frank Joseph	D.C.	B.S. 1953, Virginia Military Institute	
Komrath, John	Pa.	Koyer, Allan Norman	D.C.
B.S. 1950, Pennsylvania State College		B.S. 1943, College of the City of New York	
Konfessh, Gertrude Anne	Ill.	Kowles, Anthony Joseph	Pa.
Konios, Nick Alexander	W.Va.	A.B. 1952, Wilkes College	
A.B. 1951, Marshall College		Kovtades, Gregory N.	N.H.
Konkey, Milton Stuart	D.C.	Kraft, Charles Albert	N.Y.
B.S. 1944, M.S. 1948, Creighton University		Kraft, Simon Richard	Va.
Konkow, Ella Klaman	Mid.	Kradom, Alvin	D.C.
A.B. 1945, Radcliffe College		Krakower, Morris Ira	D.C.
Konrad, Edmund George	Wash.	Kramer, Arnold	D.C.
B.S. 1932, U.S. Naval Academy		Kramer, Carl Aaron	D.C.
Koselle, George Grayson, Jr.	Va.	Kramer, Gerson Bullfaut	D.C.
Kouss, George Hill	Va.	A.B. 1951, Rutgers University	
Kouss, Eleanor Leona	D.C.	Kramer, Joshua	Mid.
Kopaka, Lorraine Mae	Ohio	Kramer, Julian	D.C.
Kopek, John Lougin	N.Y.	B.S. 1947, College of the City of New York	
Kopain, Ethel Hiltwitz	D.C.	Kramer, Norman Clifford	D.C.
Kopain, Theodore Jonathan	D.C.	B.S. 1945, The Citadel	
Kopelton, Florence	Mid.	M.S. 1950, The George Washington University	
Koptalas, Margaret Marion	D.C.	Kramish, Arvin Morris	D.C.
Korb, Louis David	Mid.	A.B. 1947, University of Denver	
A.B. 1949, Brown University		Kransdorf, Ronald Joseph	D.C.
A.M. 1952, Boston University	Pa.	Krautz, Charles David	D.C.
Kordach, Stephen Joseph	Mid.	Krauzler, Theodore	D.C.
A.B. 1951, West Liberty State College		Krasner, Howard Bruce	D.C.
Kordell, Alfred John	D.C.	Kraske, Barbara Lillian	Mass.
Korol, Betty Ann	D.C.	Kraus, Jerome	Mid.
Korn, Adene Appiah	D.C.	A.B. 1942, University of Chicago	
A.B. 1958, Western Maryland College		B.S. in E.E. 1947, University of Illinois	
Kornia, Iser, Alvin	D.C.	Kraus, Julie	D.C.
A.B. in Govt. 1952, The George Washington University	N.J.	Kraus, Stephen Victor	N.Y.
Koronakov, Ann	Mid.	Kraynick, Janet Louise	Pa.
Korpeck, Betty Fram	N.Y.	Kreimeyer, Robert Flaxman	Mid.
Koritz, Michael	Iowa		
Koritz, Don Carl			
A.B. 1951, Coe College			

Students Registered

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Ladd, Culver Sprigle, Jr. B.S. 1953, University of Maryland	Md.	Landreau, Flore Eleanor	Md.
Ladner, Irving A.B. 1945, College of the City of New York	D.C.	Landried, Edna Marie A.B. 1940, Iowa State Teachers College	D.C.
J.D. 1940, The George Washington University		Landman, Robert Samuel A.B. in Govt. 1951, The George Washington University	Va.
Ladner, Sophie Hornstein	N.Y.	Lane, Anthony Thomas	D.C.
Laffa, Edward John	Calif.	Lane, Earl Frederick A.B. 1944, Carleton College	Iowa
LaFontaine, Frank Louis B.S. 1947, Columbia University	Md.	Lane, Elizabeth Mary	Va.
Lafont, Nina Marie B.F.A. 1944, Richmond Professional Institute	Va.	Lane, Elizabeth Walker	D.C.
LaForme, Jane Lorraine		Lane, Francis Edward	Md.
Lahay, John Edward B.S. 1944, University of Maryland	Mass.	Lane, Jack	D.C.
Lane, Roland Oscar A.B. in Govt. 1951, The George Washington University	Md.	Lane, John William	N.Y.
Lairson, Paul D.	D.C.	Lane, Joseph Martin B.S. 1950, Case Institute of Technology	Ohio
Lavigne, Jon McMahon	Ky.	Lane, Mauden Harmon B.S. 1948, Emory and Henry College	Va.
Lazor, Beanie	Va.	Lane, Stewart Lyndburg	Va.
Lazor, Frances Margaret	Conn.	Lane, Thomas William A.B. 1951, Middlebury College	Va.
Lazor, Robert John	Va.	Laner, Frances J.	D.C.
Lazor, Nancy	Va.	Laney, Arthur Rufus, Jr. A.B. 1947, A.M. 1949, The George Washington University	D.C.
Lamania, Daniel	D.C.	Lang, Joan Clark	D.C.
Lamb, Denny Virginia A.B. 1941, The George Washington University	Md.	Lang, William Adams	D.C.
Lambert, Eugene Isaak	D.C.	Langdon, Dorothy Irene	D.C.
Lambert, John Holmes	D.C.	Langdon, Jean Elizabeth A.B. 1951, University of Cincinnati	Ohio
Lambert, Margaret Lucille A.B. 1951, The George Washington University	Va.	Langdon, Russell Austin	Nebr.
Lambert, Robert Johnston		Langenhough, Philip Arvid A.B. 1948, St. Olaf College	Ill.
Lambert, Sam May A.B. 1945, A.M. 1948, West Virginia University	Va.	A.M. 1952, University of Minnesota	
Lambert, Mary Lee	D.C.	Langenbeck, Earl Henry B.S. in C.E. 1944, University of Missouri	Md.
Lamberton, Bernice Gieves B.S. 1927, Rhode Island State College	D.C.	Langley, Catherine Callahan	Ky.
A.M. 1931, Brown University	D.C.	Langley, Verma Ruth B.Mus. 1939, University of Oklahoma	Okl.
Lambrecht, James Leroy B.S. in E.E. 1949, University of Washington	Wash.	Langman, Dean Bruce	N.M.
M.B.A. 1951, Harvard University		Langner, Edmund Aristas	Minn.
Lambson, Mary		Langstaff, Samuel Husbands, Jr. A.B. 1951, Oberlin College	Ky.
Lamers, Marion Sims	D.C.	Languedoc, Arthur Joseph	Mass.
Lamke, Edith Ashley	Va.	Lanier, Dorothy Orlene	D.C.
Lamkin, John Alexis A.B. 1950, University of Mississippi	D.C.	Lannen, Felicia Roberta A.B. 1950, University of California at Los Angeles	Md.
LaMonte, Peter	Va.	Lanning, Geoffrey J. A.B. 1950, LL.B. 1942, Harvard University	Va.
Lampert, Richard Charles A.B. in Govt. 1951, The George Washington University	Md.	Lapham, Lois Eugenia	D.C.
Lampiris, Helen Joan	Pa.	Lapsky, Maurice Myrveish	D.C.
Lamplin, Julia McCann B.S. 1952, University of Alabama	D.C.	Lapointe, Joseph Claude B.S. 1949, University of Maine	Md.
Lampron, Lester Bogness	Ala.	Laprade, Gertrude Cecelia	Va.
Lampshire, Harvey Robert M.B.A. 1949, Harvard University	Md.	Largent, Shirley Anne	W.Va.
Laraja, Harold M.	Va.	Laric, Ivan Gerald A.B. 1949, Brown University	D.C.
Landes, Melvin Bowman A.B. 1930, M. Therson College	D.C.	Larimore, Marston Lee A.B. 1951, Washington College	Md.
Landess, Fred Stone	Va.	Larison, Oliver Knier A.B. in Ed. 1949, The George Washington University	Md.
Landis, Kitty Lee	D.C.	Larkin, Roberta Lankford A.B. in Ed. 1944, The George Washington University	Va.
Land, Edward George B.S. 1952, University of Richmond	Va.		
Landis, Joseph Wincy	D.C.		

Larkin, Timothy Joseph	Md.	Lawrence, Myra Jeanne	D.C.
A.B. 1940, A.M. 1950, Columbia University		Lawson, Betty Jane	Ill.
Larsen, Marjorie Bern	Md.	Lawson, Donald Burke	Ohio
Larsen, Nancy Joy	D.C.	Lawton, Richard Stanley	Va.
B.S. 1932, Union University, N.Y.		Lay, James Dominic	Pa.
Larson, Annice Frances	Ill.	Layman, Richard Paul	
Larson, August	Va.	B.S. 1950, Pennsylvania State College	D.C.
Larson, Charles Howard	Ind.	Layne, Edward Booker, Jr.	
A.B. 1952, Indiana University		A.B. 1951, University of Maryland	Va.
Larson, Mary Jane	D.C.	Layne, Ennis Cecil, Jr.	
Larson, Raymond Morris	D.C.	B.S. 1950, M.S. 1951, The George Washington University	Va.
B.S. 1951, Bradley University		Layton, Horace Leon	D.C.
Larson, Walter Julius	Ind.	Lazaroff, Philip	Md.
Larson, Waunetta J.	D.C.	Lazas, Donald Joseph	Mass.
Larter, Mary Dee	D.C.	Lazowski, Jennie Helen	N.Y.
A.B. 1952, Barnard College	Pa.	Lazar, William Joseph	Calif.
LaRue, Pauline	D.C.	Lazzari, Lucille Lillian	D.C.
LaRue, Robert Emmet		Lazzaroni, Jose Antonio	Mass.
A.B. 1952, The George Washington University	D.C.	Leach, Charles Albert	
Laschalt, Marilyn Elizabeth	D.C.	B.S. 1950, Springfield College	W.Va.
Laser, Norman Lynn		Leach, Paul Willis	Texas
A.B. in Ed. 1952, University of Maryland	D.C.	A.B. 1951, Berea College	Pa.
Lasky, Thora Lynne	D.C.	Leach, Thomas Grover, Jr.	Mich.
Laso, Herman Alfredo	D.C.	Leahy, John Jerome	
Last, Arthur Francis	Fla.	Leahy, William Vincent Crahan	
Latham, Royce	D.C.	A.B. 1944, University of Pennsylvania	
Lathrop, Donald Bryce	Del.	A.M. 1950, The George Washington University	Md.
Lathrop, Robert Park	D.C.	Leake, Helen Baker	Md.
B.M.E. 1942, The George Washington University		A.B. 1950, Marshall College	D.C.
Latimer, George Webster	Md.	Leaman, Virginia Emily	D.C.
Latino, Jennie Mary	D.C.	Lear, Janice Evelyn	
A.B. 1941, The George Washington University		Leard, Emil Watson	Va.
LaTorre, Vincent Thomas	D.C.	A.B. 1910, Mercer University	
Latta, James Clay, Jr.	Md.	L.L.B. 1914, University of Georgia	
Lau, James Brownlee	Va.	Leavitt, George Albert, Jr.	
A.B. 1948, Michigan State Normal College		A.B. 1952, The George Washington University	Md.
A.M. 1950, University of Michigan		Lebel, Andre Leon	Va.
Laubacher, Lawrence Edwin	D.C.	Lebkicher, John Van Rood	D.C.
B.F.E. 1952, The George Washington University		Lebowitz, Helen Louise	N.Y.
Laubach, Edmund Joseph	N.J.	Lebrecht, Richard	D.C.
B.S. in C.E. 1949, Newark College of Engineering		A.B. 1950, The George Washington University	Md.
M.S. in C.E. 1951, Massachusetts Institute of Technology		Lecky, Robert Sterling	Kant.
Lauder, Robert Bruce, Jr.	N.Y.	Leclair, Joseph Roland	
Lane, Henry John	D.C.	B.S. 1948, University of Maine	
A.B. 1951, Valparaiso University		LeClair, Marie Jeannette	Va.
Lander, Edith Elina	D.C.	A.B. 1947, The George Washington University	Va.
Laubery, Elsie Florence	D.C.	Ledbetter, Donald Leon	D.C.
Lauter, Florence Solatt	D.C.	Leddy, John Edward	Va.
B.S. 1917, Northwestern University		Ledoux, Henry Albert	D.C.
M.S. 1923, University of Chicago		Lee, Catherine Sue	Va.
Laut, James Joseph	N.Y.	Lee, Dah Ken	D.C.
B.S. 1948, Syracuse University		Lee, Donald Clifford	
Lavagnino, Geraldine S.	Md.	Lee, Dorothy	Va.
Lavigne, John Louis	N.Y.	B.S. 1952, The George Washington University	
Law, Russell Lewis	Md.	Lee, Harry Alexander	China
B.S. 1950, Seton Hall University		A.B. 1918, Furman University	Va.
Law, Sarah Frances	D.C.	Lee, Hui Kit	Pa.
Lawler, John Michael, Jr.	Va.	Lee, Helen Marie Miller	Md.
A.B. 1950, American International College		Lee, Joan	
Lawlor, Francis Joseph	Calif.	Lee, Kenneth Freeman	
Lawlor, Henry William	D.C.	Lee, Leroy Linwood	
Lawlor, Thomas Jerome	Md.	A.B. in Govt. 1948, A.M. in Govt. 1952, The George Washington University	
Lawrence, Lester Albright	Va.		

Students Registered

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Lee, Lewis Lathan, Jr. A.B. 1950, University of Georgia	Md.	Lemons, Milton Samuel	Md.
Lee, Maurice Ph.D. 1946, B.S. 1948, M.S. 1949, University of Chicago	D.C.	Lempert, James Jacob	N.J.
Lee, Murray Kent A.B. 1951, The George Washington University	Va.	Leisenmann, Ernest C., Jr.	Va.
Lee, Newton Hunt, Jr.	Va.	Lentler, John Kirkland	D.C.
Lee, Ralph William III B.S. 1950, University of North Carolina	Md.	Leitch, Myron Leonard	D.C.
Lee, Robert B.M.E. 1949, The George Washington University	D.C.	Lentz, Marcette Anathe	Pa.
Lee, Samuel Benjamin University of Virginia	D.C.	Leonard, Dorothy Anna	Va.
Lee, Walter Bryan, Jr.	Va.	Leonard, Eugene Anthony A.B. 1950, The George Washington University	Va.
Leeth, Gladys Gertrude	D.C.	Leonard, Frederic Adams B.S. 1947, M.S. 1948, University of Maine	Md.
Leeth, Sarah Pamela A.B. 1952, Wells College	Va.	Leonard, John Cameron	Pa.
Leeman, Mary Cassibry	Md.	Leonard, John Henry, Jr.	Minn.
Leeman, Robert Whitney B.S. 1954, U.S. Naval Academy	D.C.	Leonard, Lester Carpenter, Jr. A.B. 1952, Macalester College	N.J.
Leper, Robert Rimborough A.B. 1954, University of North Carolina	Md.	Leonard, Lester Carpenter, Jr. A.B. 1950, Washington and Lee University	D.C.
Leff, A.M. 1942, The George Washington University		Leonard, Orel Klein A.B. 1940, A.M. 1951, The George Washington University	Md.
Leff, Robert William Ed.D. 1950, Columbia University		Leonard, Robert Sterling A.B. 1950, LL.B. 1947, The George Washington University	D.C.
Leese, Bernard McKenzie, Jr. B.S. 1952, The George Washington University	Md.	Leonard, Thomas Pin A.M. 1944, Harvard University	D.C.
Leese, Marilyn Louise	Va.	Leonard, Thomas Pin	Pa.
Leese, Virginia Douglas	D.C.	Leone, Frances Katherine	Malaya
Leffert, Miles Search	D.C.	Leone, Sau Lam	Malaya
Leffert, Thomas Cullen A.B. 1952, The George Washington University	Va.	Leone, San Pan	Pa.
Leffer, John Phillip	Pa.	Lepchinsky, Charles Richard	Ohio
Leffer, Rodney Lee		Lerch, Marilyn Anne	Conn.
Leikowitz, Saul B.S. 1940, College of the City of New York	Md.	Lerine, Robert Joseph	Mo.
Leitch, Frances Walton	N.Y.	Lerman, George Sidney A.M. 1940, Washington University A.M. 1950, University of Maryland	N.Y.
Leino, William David	D.C.	Lerner, Henry Robert B.S. in M.E. 1949, College of the City of New York	D.C.
Leiman, Alicia H. A.B. 1955, University of Cincinnati	Pa.	Lerner, Lawrence Phi	N.Y.
Leir, Adele A.B. 1944, Queen's College	Md.	LeRoy, Garrett Fisher B.S. in C.E. 1950, Clarkson College of Technology	Md.
Lehr, Richard	D.C.	Les, Joseph Walter B.S. 1951, University of Maryland	Va.
Leighton, Leovade A.B. 1950, Tufts College	Mass.	LeSage, Joan Madeline	Conn.
Leitch, Parker Dunlop A.M. 1941, The George Washington University		LeSevicius, Joseph John	Pa.
Leiphart, George Conrad B.S. in Ed. 1950, Northern Michigan College	Mich.	Leskowitz, Louis Emery	Va.
Leiser, Richard Robert A.B. 1951, Rutgers University	N.J.	Lessard, Arnold F. A.B. 1947, Boston University A.M. 1950, Columbia University	D.C.
Leith, Nite Carvalho B.S. 1948, Virginia Polytechnic Institute	Brazil	Lesser, Helene Nancy	Mont.
Leit, Theodore Hanton, Jr. B.S. 1940, University of Maryland	Va.	Lester, Melvin Arthur A.B. 1952, Montana State University	N.C.
Leiton, Lewis Harvey		Lestick, Augustus Peter	Va.
Lejone, Donald Charles B.S. A.M. 1952, Syracuse University	Md.	LeStrange, James Francis	D.C.
Lemmon, Mary Elizabeth	Md.	Lester, Gloria Helene	Wash.
Lemons, Chester Wesley	Va.	Letterman, Lincoln Louis A.B. 1918, University of Washington	Va.
		Letzkus, Donald Richard	D.C.
		Leung, George Book	Md.
		Leverington, Richard Dean	La.
		Levey, Harold Alvin, Jr. B.S. 1950, LL.B. 1953, Tulane University	D.C.
		Levick, Robert Richard	D.C.
		Levin, Anina Toha	D.C.
		Levin, Bernard T. B.S. 1940, LL.B. 1952, American University	D.C.
		Levin, Irving	D.C.
		Levin, Julian Edwin	D.C.

Levin, Neal Theodore	D.C.	Lidky, Martin David	D.C.
B.S. 1950, University of Virginia		B.S. 1950, The George Washington University	Va.
Levin, Sheldon George	Calif.	Liebenau, Gerald Louis	Md.
A.B. 1950, University of Southern California		A.B. 1950, Yale University	
Levin, Sidney	D.C.	Lieberman, Alfred	
B.S. 1951, University of Maryland		A.B. 1949, College of the City of New York	N.Y.
Levine, Joan	D.C.	A.M. 1952, University of Southern California	Md.
Levine, Marion Schoen	D.C.	Lief, Joan Ellen	W.Va.
Levine, Nira Rosenstein	D.C.	Liepina, Rita Gundega	
A.B. 1951, Hunter College		Light, Eber William, Jr.	Ga.
Levine, Philip	Va.	B.S. 1948, West Virginia University	Pa.
B.S. 1951, University of Connecticut		Light, James Wynson	
Levine, Saul Sherwin	D.C.	Lighthiser, Edgar Curtman	
Levine, Sidney Levin	D.C.	B.S. in Com. 1952, Grove City College	D.C.
B.S. 1947, Brooklyn College		Lightman, Evelyn Rhea	Md.
Levinson, George Edward	Va.	Lighton, Edward William	
Levington, Patricia Anne	Va.	B.S. in M.E. 1950, Cornell University	D.C.
Levinson, Jo Ann	D.C.	Liljelund, Ralph John Herman	
Levinson, Priscilla Levy	Md.	M.S. in M.E. 1950, Ph.D. 1952, Purdue University	Va.
A.B. 1948, Hunter College		Lillev, Horace Clinton	Va.
Levitan, Roger Stanley	D.C.	Lilliefors, Hubert Whitman	
Levitaky, Leon Robert	Pa.	A.B. 1952, The George Washington University	W.Va.
B.S. 1951, Muhlenberg College		A.M. 1951, Michigan State College	Md.
Levy, Albert Harold	D.C.	Lilly, Evelyn Loretta	
Levy, Charles William	Va.	Lilly, Patricia Lou	
Levy, Charlotte Jean	D.C.	Lima, Joseph	
Levy, Herman David	D.C.	B.S. 1950, American University	D.C.
Levy, Joseph	D.C.	A.M. 1951, The George Washington University	D.C.
Levy, Leon	Pa.	Lin, Germaine	
Levy, Lois Werbner	Md.	Lin, Hang Shan	Va.
A.B. 1948, Radcliffe College		B.S. 1951, University of Maryland	
Levy, Lorraine Marlene	D.C.	Linawever, Paul Glenwood, Jr.	Va.
Levy, Marvin	D.C.	A.B. 1951, Duke University	Conn.
Levy, Steven Everett	Va.	Lincoln, John Larkin	D.C.
Low, Jew Chuck	D.C.	Lind, Vincent Eugene	
Lewark, Melvin Vernon, Jr.	Va.	Lind, William Edmund	
Lewis, Alice Elizabeth	Md.	A.B. 1953, The George Washington University	D.C.
Lewis, David Andrew	Va.	Lindamood, Barbara Ann	Va.
Lewis, David LeRoy	Pa.	Linden, Arthur S.	N.Y.
Lewis, Edward, Jr.	Md.	B.S. 1941, Purdue University	Md.
A.B. 1951, The George Washington University		Linden, Betty Billingsley	
Lewis, Elizabeth Leone	D.C.	Linden, Robert Joseph	
Lewis, Gene Hope	D.C.	Lindley, Clyde Joe	
Lewis, Gilbert Howard	Pa.	A.B. 1937, University of Missouri	N.Y.
B.S. 1948, U. S. Merchant Marine Academy		A.M. 1948, University of Iowa	
B.S. 1951, Massachusetts Institute of Technology		Lindner, Thaddeus Alphonse	D.C.
Lewis, Harvey Daniel	Va.	A.B. 1951, The George Washington University	N.Y.
A.B. 1924, Wolford College		Lindow, Eva Thompson	
A.M. 1948, University of South Carolina		Lindley, Douglas Edward	D.C.
Lewis, Jay Sheesley	D.C.	A.B. 1950, The George Washington University	Va.
Lewis, Joan Marie	Md.	Lindsay, Huxton Joseph	
Lewis, Joseph Newton	D.C.	Liner, Dorothy Lord	Va.
Lewis, Lunaford Harland	Va.	B.S. 1952, Wilson Teachers College	D.C.
Lewis, Monique Pauling	D.C.	Linhart, Joseph Wayland	D.C.
Lewis, Samuel Harold	D.C.	Linkins, Anna Nell	S.D.
Lewis, Theodore David	D.C.	Linn, Elinor Ann	Mass.
Lexshon, Webster Chadwick	Md.	Linn, James Bernard	
Li, Louise Elizabeth	Va.	Linn, Muel W.	
Li, George Kuo Chi	D.C.		
Liberty, Cyril Jean	Va.		
A.B. in Govt. 1950, The George Washington University			
Libman, Gerald	D.C.		
Liebello, James John	Md.		
B.S. in M.E. 1951, West Virginia University			
Liddick, David LeRoy	Pa.		

Linnert, Ann Marie	D.C.	Loew, Solomon B.	Md.
Lippman, Fred Jay	D.C.	A.B. 1949, College of the City of New York	
Lippman, Frank Joseph	D.C.	Loftland, Clyde Alvin	Va.
Lipp, Edward	D.C.	Loftmark, Walter Rolfe	Mass.
B.S. 1949, Temple University		B.S. 1951, Tufts College	
A.M. 1950, University of Pennsylvania		Loftus, Walter Lee	Va.
Lippert, Raymond Franklin	Md.	Loftus, Margaret Anne	D.C.
B.M.E. 1949, The George Washington University		A.B. 1948, Mount Holyoke College	
Lipitz, Lewis Hirsch	D.C.	A.M. 1951, University of California	
Loas, Philip Louis K.	D.C.	Logue, Ruth	Okla.
Loas, John Walter	Md.	B.S. 1941, Radcliffe College	
Loas, Emanuel Herbert	Ohio	Loizeaux, Paul Herbert	Md.
B.S. 1949, Ohio State University		Lombardo, Samuel James	Calif.
Loe, George	D.C.	Lombberger, Stanley Thomas	D.C.
Loe, Lewis Aloysius	D.C.	Long, Albert Wallace, Jr.	D.C.
Loehel, John Charles	D.C.	Long, Alexander	D.C.
Loehel, Arthur Ludwig	Md.	Long, Charles Whittington, Jr.	Fla.
B.S. 1944, Trinity College		Long, Kenneth Earle	Va.
M.B.A. 1947, University of Pennsylvania		A.B. 1950, Western Michigan College	
Loehke, Louis	Md.	Long, Nancy Catherine	Md.
Loehke, Louis Eileen	Ohio	A.B. 1952, The George Washington University	
Little, Martha Louise	Md.	Long, Nancy Dean	N.Y.
A.B. 1935, Wellesley College		B.S. in Ed. 1941, New York State Teachers College	
A.M. 1942, Middlebury College		Long, Robert Lee	Calif.
Little, Robert Paul	D.C.	A.B. 1952, University of Redlands	
Littlepage, Carolyn Floy	D.C.	Long, William Francis Edward II	Md.
Littlepage, Ellen Frances	Md.	A.B. 1946, A.M. 1947, The George Washington University	
Littlepage, John Marshall, Jr.	Calif.	Long, William John	Ill.
Livingood, Edwin Ray		L.L.B. 1926, Illinois Wesleyan University	
A.B. 1949, University of Rochester		Long, William T.	Pa.
Livestav, Edward Haywood	Va.	B.S. 1952, Tufts College	
Livingston, Melvin Jackson	Md.	Longen, Francis John	S.D.
A.B. 1951, University of Alabama		Longley, Marjorie Jo	Mo.
Livingston, Charles Richard	Va.	Longley, Robert William	D.C.
Livingston, Gordon Kendal	Md.	B.S. 1945, Lovola College	
A.B. in Grad. 1951, The George Washington University		Longstreet, Archie P.	N.J.
Livingston, Susan Marie		Longstreet, James John	Pa.
Lozier, Anthony	Va.	B.S. 1950, University of Scranton	
Lozier, Federico	Pa.	Looker, Karen Easley	Va.
Lozier, Albert Lawrence, Jr.	D.C.	Loomis, Wilhelmmina Tortike	D.C.
A.B. 1951, The George Washington University		Loose, Frederic DeTorsik	Va.
Lloyd, Archie Eugene	Va.	Lopes, James	D.C.
Lloyd, Benjamin Joseph, Jr.	Md.	A.B. 1952, The George Washington University	
Lloyd, Herman Bell	Md.	Lopez, Donald Sewell	Fla.
A.B. 1950, Randolph Macon College		Lopez, Edison Rafael	Puerto Rico
Lloyd, Nancy Genevieve	Va.	Lopez, Fred	N.M.
Lloyd, Roger William	D.C.	Lopez, Mabel Louise	Va.
Loon, Roy William, Jr.	Pa.	Lopez, Manlio Maldonado	D.C.
Loos, Gualberto Castro	D.C.	Lopez, Isoberto Mario	D.C.
Loos, Janet Kardon	Brazil	Lopez, Lavalie Maria Esther	Peru
Loosky, Joseph Rafe	D.C.	A.B. 1952, Tufts College	
Loosky, H. Preston	D.C.	A.M. 1948, Furman University	
Loosky, Laurence George	D.C.	Lotenz, Alma Jocelyn	D.C.
Looswood, Anne Kirkley	N.Y.	Lory, Marian Joyce	D.C.
Lozano, Paul A.	Va.	Lory, Sarah Dineen	Va.
Lozier, Carl Jean	N.Y.	A.B. 1924, Morningside College	
Lozier, Harry Howard, Jr.	Mo.	Lotts, Thomas Erskine	Va.
B.S. 1941, U.S. Naval Academy		Loucks, Phyllis M.	W.Va.
B.S. in C.E.C. 1947, M.S. in C.E.C. 1948, Rensselaer Polytechnic Institute		B.S. 1950, Ohio State University	
Lozier, Charlotte Mae	Md.	Loudon, Dorothy Ann	Ohio
A.B. 1952, University of Maryland		B.S. in Ed. 1951, Muskingum College	
Lozier, Alan Sherwood	D.C.	Loughmiller, Clair Martin, Sr.	D.C.
B.S. 1950, Georgetown University			

Loughridge, Glenn H. A.B. 1952, American University	Va.	Lum, David Walker B.S. 1950, M.S. 1951, The George Washington University	D.C.
Loughridge, Harry Joseph A.B. 1951, The George Washington University	Va.	Lum, Gertrude Sheva A.B. 1950, College of Wooster M.S. 1952, The George Washington University	Pa.
Louka, Kathryn Theresa B.S. in E.E. 1951, Lawrence College	Mass.	Lum, Ronald St. Alban	Va.
Lovale, Sam B.S. in E.E. 1951, Lawrence College	Mich.	Lund, Eleanor Cynthia	D.C.
Love, Richard Schuyler A.B. 1947, University of Rochester	D.C.	Lund, Theodore, Jr. B.M.E. 1948, College of the City of New York	Mich.
Love, Verner Richard	N.Y.	Lund, Walter Joseph	Va.
Lovenstein, Lawrence Jennings	D.C.	Lundgren, Arthur Ernest B.S. 1941, University of California	Calif.
Loving, Elbert B.	D.C.	M.S. in M.E. 1948, Rensselaer Polytechnic Institute	Conn.
Loving, James L. Jr. B.S. 1929, Texas Agricultural and Mechanical College M.S. 1932, Cornell University	D.C.	Lundin, Carl Edward B.S. 1938, Trinity College LL.B. 1942, Hartford College	Wash.
Lovine, Mary Katherine	Ill.	Lundy, Maurice Henry B.S. 1940, University of Washington	Va.
Low, Agnes	D.C.	Luning, Alfred Onno	D.C.
Low, James Patterson	D.C.	Lunn, Eugene Edward B.S. 1949, Youngstown College	N.J.
Low, Mary Louise	D.C.	Lunny, Joan Helen A.B. 1950, McGill University	D.C.
Low, Richard Call A.B. 1952, Brigham Young University	Calif.	Lupuloff, Max B.S. 1951, Seton Hall University M.S. 1952, Washington University	D.C.
Low, Richard James	Mass.	Luria, Charles B.S. 1938, College of the City of New York	D.C.
Low, Robert Allen A.B. 1941, Stanford University	N.Y.	Luria, Jack Ira Luria, Leatrice	Va.
Lowder, Margaret Howard A.B. 1945, The George Washington University	Va.	Lorus, Angelo G. B.S. 1953, University of Idaho	Va.
Lowe, Cameron Anderson	Va.	Lusk, Phoebe Alice A.B. 1947, Eastern Nazarene College	D.C.
Lowe, Franklin Gerald A.B. 1951, The George Washington University	D.C.	Lusk, Harold Frederic Lutz, Henry, Jr.	Pa.
Lowe, Harvey Spencer, Jr.	D.C.	Lutz, Howard Albert	D.C.
Lowe, Robert Gaule	Va.	Lutz, Robert Blair A.B. 1949, Dickinson College	D.C.
Lowe, Robert Joseph	Va.	Lyddine, Mary Elizabeth B.S. 1944, Columbia University A.B. 1948, A.M. 1952, The George Washington University	Md.
Lawsch, Emil	D.C.	Lvell, Harry Edwin A.B. 1936, Randolph-Macon College	Va.
Lowers, Burton George, Jr.	D.C.	Lyle, Ann Martin	Tenn.
Lowman, David Daniel A.B. 1940, Stanford University LL.B. 1952, The George Washington University	Va.	Lyle, Robert Eugene A.B. 1950, The George Washington University	Fla.
Lowman, Eleanor Sather A.B. 1949, Stanford University	Va.	Lyman, Jack Bryson A.B. 1953, University of Miami	Tenn.
Loyet, Thomas Jean	Ill.	Lynch, Andrew Jackson B.S. 1937, U. S. Military Academy	Calif.
Lubin, Joseph Meyers A.B. 1948, The George Washington University	D.C.	LL.B. 1938, Cumberland University A.M. 1951, George Peabody College	Va.
Lubman, Russell Alan	Md.	Lynch, Boyd Hanley A.B. 1951, Fresno State College	D.C.
Lucas, Donald Edward	Ill.	Lynch, Charles Stafford B.S. in Ch.E. 1945, Purdue University	D.C.
Lucas, Philip Elmer	Va.	Lynch, Charles Theodore	
Lums, Raymond Albert	Pa.		
Luchs, Saul Myron	N.J.		
Lusk, William Bryant A.B. 1948, University of Richmond	Va.		
Lucke, Robert Charles A.B. 1948, Catawba College	Md.		
Lucker, Joan Marguerite	Md.		
Lusky, George Victor	D.C.		
Lusy, Robert Meredith B.S. 1947, U. S. Naval Academy	Mo.		
Lutkin, Mohammed Bashir	D.C.		
Ludlow, Allen Dyer	Va.		
Lutnanen, Andrew Aatos	Va.		
Luke, Reid Stephen	Ga.		
Lukens, Mary Ellen	Va.		
Lukas, Raymond Joseph	D.C.		
Luley, Charles Edward	D.C.		

Lynch, Gerald Ross	D.C.	MacManus, Elzabeth Joyce	Va.
Lynn, Donald Hestlet	Iowa	A.B. 1948, Hollins College	
Lynn, George Ralph	D.C.	MacManus, Joann	Va.
Lynn, James A.	Md.	A.B. 1951, Barnard College	
A.B. 1958, A.M. 1959, University		MacMillan, Ronald Alexander	Calif.
of California at Los Angeles		Mc Neil, Joseph Hector	Va.
Lynn, Mary Elizabeth	D.C.	Macdon, Edward Malcolm	Va.
A.B. 1949, Randolph Macon College		B.S. 1951, The George Washington	
Lynn, Morton Harvey	D.C.	University	
A.B. 1941, Lyndallburg College	Md.	Macon, Robert Carpenter	D.C.
A.M. 1942, Duke University		Macosin, Aphrodite	D.C.
Lynn, Murray G.		Macosin, Helen	D.C.
Lynn, Robert, Jr.	Ill.	A.B. 1957, University of Michigan	
A.B. 1949, College of the City of	D.C.	Madara, John De, Jr.	Va.
New York		Madlox, Anna Louise	Md.
A.M. 1947, New York University		Madoran, Joan Elizabeth	Md.
Ph.D. 1952, American University		Madren, Beverly Elizabeth	D.C.
Lynne, Jean Marion		Madsen, Andrew Calvin	Va.
Lynne, Jean Marie	Mass.	Madsen, Gordon Axel	Utah
Lytle, John Albert	D.C.	B.S. 1954, University of Utah	
	Va.	Madsen, Ronald Earl	Utah
		B.S. 1952, Brigham Young	
		University	
		Madsen, Ruth Madeline	Va.
		B.S. 1950, Simmons College	
		A.M. 1954, University of Maine	
	D.C.	Maestre, Anthony, Jr.	Va.
	Va.	Magallanes, Isidaly Borges	D.C.
	Cuba	Magness, Lanna Lee	D.C.
		Magnison, Edward Lavelle	Va.
	Md.	M.S. 1951, University of	
		Wisconsin	
	Va.	Maguire, Patricia F.	D.C.
	Va.	A.B. 1958, Barnard College	
	D.C.	Mahaffey, Lorraine Wingo	Va.
	Va.	Mahoney, John Gage	Mich.
	Va.	B.S. 1949, Michigan State College	
	Md.	Mahaney, Michael James, Jr.	Md.
	Va.	Mahaney, Robert Cornelius	Mich.
	Va.	B.S. 1952, Michigan State College	
	Va.	Maher, Agnes Lucia	N.J.
		Maher, Claudia Prevost	Va.
	Ohio	Mahoney, Elaine	Utah
		Mahoney, Joan Helen	Fla.
	D.C.	A.B. 1949, University of Maryland	
	Va.	Maidens, William Arthur, Jr.	Md.
		Main, George Henry	Md.
		B.S. 1950, U.S. Merchant Marine	
	N.C.	Academy	
		Main, Nancy Eloise	D.C.
		Maimero, Leonard Nicholas	Conn.
	Fla.	A.B. 1951, University of	
		Connecticut	
	Va.	Malach, Ormand Russell	Texas
		Malawandwal, Mohammad Hashim	D.C.
	D.C.	Malceke, Daniel Harold	D.C.
	Pa.	Malcox, Joan	Pa.
	D.C.	Malora, Gary Hunter	Md.
	Md.	Makela, Reuben Raphael	D.C.
		A.B. in Govt. 1943, The George	
		Washington University	
		Milaga, Joseph Frank	Va.
	Md.	Malinoski, Anthony Joseph	Md.
		B.S. 1951, California Institute of	
	D.C.	Technology	
		Malask, Bernice	D.C.
	Va.	Malec, Edward Lee	Md.
	Va.	B.S. 1952, University of Illinois	
	Md.	Maleson, Paul	Pa.
	Va.	B.S. 1949, Lehigh University	
		LL.B. 1952, University of	
		Pennsylvania	

M

Maureen, Wallace			
Mahon, Charles McDonald, Jr.	D.C.		
Mahoney, Robert Joseph, Jr.	Va.		
A.B. 1952, Georgetown University			
Mahoney, Ross Galloway	Cuba		
A.B. 1950, Johns Hopkins University			
Madams, Frances Irene	Va.		
Madams, Mildred Vivian	Va.		
Madams, Roger Milo	Va.		
Madams, Andrea May	D.C.		
Madams, Clifford Elvin	Va.		
Madams, Frank Joseph	Va.		
Madams, George Anthony	Md.		
Madams, John Thomas	Va.		
Maer, Almon Turley	Va.		
B.S. 1944, M.S. 1946, Purdue			
University			
Maer, George			
A.B. in Govt. 1953, The George	Ohio		
Washington University			
Magaden, Arlene			
Magness, Robert	D.C.		
A.B. 1941, A.M. 1942, University of	Va.		
Michigan			
Magner, Ernest William, Jr.	N.C.		
J.D. 1949, University of North			
Carolina			
Mahe, Willard Frank	Fla.		
A.B. 1950, Harvard University			
Maier, Jerome S.	Va.		
B.S. 1951, College of the City of			
New York			
Maier, Ruth F.	D.C.		
Maier, Ann, Mitchell	Pa.		
Maier, Kenneth Montgomery	D.C.		
Maier, Curtis Lavine	Md.		
Maier, Thomas R.			
B.S. 1955, U.S. Naval Academy			
Maier, Flora Leslie			
B.S. 1951, University of Maryland			
Maier, Lawrence Hamilton			
B.S. in Comm. 1948, University of			
North Carolina			
Maier, Hugh Donald			
Maier, Robert Lee			
Maier, Ella Gilmore			
Maier, Donnie Anne			
A.B. 1950, College of Wooster			

Maletz, Frederick John	D.C.	Manser, Donald Ellsworth, Jr.	Mo.
Mason, William Glen	D.C.	Mansfield, William Alton	Pa.
Mason, Robert	Va.	Manshow, Trond	Va.
Mason, Irving Herschel	D.C.	Mantell, Leroy Harris	Va.
Maize, Jack	D.C.	A.B. in Govt. 1943, The George Washington University	Va.
A.B. in Govt. 1943, The George Washington University		Manthos, Isaac Marstonald	Va.
Mallgrave, William John	D.C.	A.B. 1952, University of Maryland	Va.
Mallou, Donald Peter	D.C.	Manucia, Herbert L.	Md.
Mallou, George Peter	D.C.	B.S. 1951, University of Nevada	D.C.
Malmberg, Arthur Lewin	Pa.	Mammel, James Ernest	D.C.
B.S. 1951, University of Pittsburgh		A.B. 1948, Shepherd College	D.C.
Malone, Donald Francis	R.I.	Mann, Sophie	D.C.
Malone, John Francis, Jr.	D.C.	B.S. 1951, Wilson Teachers College	Utah
Malone, Joseph Herbert	D.C.	Manzano, Edmund Richard	
B.S. A.M. 1948, Georgetown University		A.B. in Govt. 1954, The George Washington University	
Maloney, Barbara Elizabeth	D.C.	Manzione, Joseph Anthony, Jr.	D.C.
A.B. 1951, Morehead State College of the Sacred Heart		A.B. 1951, Brigham Young University	D.C.
Maloney, Edward	D.C.	Maranes, John Vincent	D.C.
Maloney, James Edward	D.C.	Marantette, Edward Morley	Pa.
Maloney, Jean Marie	D.C.	A.B. 1949, Morehead State College	Pa.
B.S. 1951, College of Mercordia		Maravall, Joyce May	Pa.
Maloney, Marion Eileen	Md.	Marcantonio, Richard Carmen	D.C.
Mallou, Joseph Andre	Va.	Marcella, Lawrence Charles	D.C.
Malowski, Mary Marguerite	Minn.	B.S. 1951, Pennsylvania State College	D.C.
Malagelati, Anthony F.	D.C.	March, Allison Ellwood	D.C.
Malzone, Francis Richard	D.C.	March, Eli Paul	D.C.
B.S. in Phar. 1951, The George Washington University		A.B. 1950, Brooklyn College	D.C.
Mamish, Julia	W. Va.	March, Joseph Wolf, Jr.	Costa Rica
Manbeck, Harry Frederick, Jr.	Pa.	March, Shirley Ruth	Pa.
B.S. in F.E. 1949, Lehigh University		A.B. 1948, Middlebury College	D.C.
Manbert, Barbara Ann	Va.	Marchena, Jorge Jose	D.C.
Manvini, Armando	D.C.	Marchesani, Joseph Michael	Pa.
A.B. 1950, West Virginia University		Marchese, Michael, Jr.	D.C.
Mancuso, Rosalie Marie	Md.	A.B. 1950, Dartmouth College	Pa.
Mangan, Gertrude Katherine	N.Y.	Marchi, Louis Basil	D.C.
Mangano, Philip Austin	D.C.	Marciniec, Stanley Andrew	Pa.
A.B. 1952, Yale University		Marcus, Helen Eileen	D.C.
A.M. 1951, Rochester University		Marcovitz, Ruth	Md.
Maorier, William L.	D.C.	Marcus, David	
B.S. in C.E. 1942, The Citadel		Marcy, Douglas Earl	
Margold, Robert John	N.Y.	Marden, Earle Rollins, Jr.	Md.
A.B. in Ed. 1951, The George Washington University		B.S. in M.E. 1951, University of Maryland	Va.
Margum, Robert Boyd	N.C.	Mardex, Melvin Randolph	D.C.
Manson, Francis Marion	Va.	Mare, Christopher Raymond	N.Y.
Markowski, Omar	D.C.	Marfat, Harry	D.C.
Mann, David	D.C.	Margolis, Matthew David	Pa.
Mann, LeRoy Wells	Md.	Margolis, Solomon Leon	D.C.
Mann, Nancy	D.C.	Margolis, Harvey	Pa.
Mann, Richard Anthony	Va.	Margolin, Hope	D.C.
Mann, Vera Williams		A.B. 1948, Swarthmore College	Va.
A.B. 1941, Texas Christian University		Marine, Elaine Bredler	Va.
Manning, James Edward	D.C.	A.B. 1951, University of Maryland	
Manning, John Raymond	Iowa	Marinetti, Amelita Butler	Va.
Manning, Louis Menachem	Va.	A.B. in Govt. 1951, The George Washington University	
Manning, Marion Calla	Md.	Marinetti, Walter Tullio	
Manning, Martin Joseph	Pa.	B.S. 1949, Syracuse University	N.Y.
A.B. 1950, Catholic University of America		A.M. 1951, Catholic University of America	Pa.
Mann, Kyoma	Ill.	Marino, Frank Daniel, Jr.	Va.
Marack, Lyle F.	Ill.	Mark, Ann	
B.S. 1951, Bradley University		Markel, Erich Hans	Md.
Mazurka, Alan Hope	D.C.	L.L.B. 1948, S.J.D. 1951, Friedrich-Alexander University of Erlangen	
Mazurka, Spens George	N.I.	Marken, Geraldine Virginia	
Mason, John Joseph	D.C.	B.S. 1950, Maryland State Teachers College, Towson	
Masbridge, Fred Hardy	S.D.		

Markle, Donald Eugene			
Marion, George	Md.	Marsteller, Mary Rogers	Va.
A.B. 1948, University of Pittsburgh	Pa.	Martija, Consolacion Maria de Joya	Md.
Mares, Alan Norman		B.J. 1949, University of Santo Tomas	
Marks, Sally Jean	R.I.	Martin, Carrie Panebaker	Va.
A.B. 1952, Wellesley College	Conn.	Martin, Clark Ogden	Va.
Marlin, John Marshall		B.S. 1948, University of Virginia	
Marlow, Charles Austin, Jr.	D.C.	Martin, Cynthia Davis	D.C.
A.B. 1951, The George Washington	Va.	Martin, Daniel Walter	Md.
University		Martin, Donald Robert	Va.
Marmor, Alfred Charles	N.Y.	Martin, Frances H.	Va.
Marquardt, Walter Ernest, Jr.	N.D.	Martin, Francis Tolson	Md.
B.S. 1949, U.S. Naval Academy		Martin, Frank Eugene, Jr.	D.C.
B.C.E. 1951, Rensselaer Polytechnic		Martin, Harry Robert	D.C.
Institute		A.B. 1946, University of Puerto Rico	
Martinez, Joseph Anthony	N.Y.	Martin, Helen Ruth	Va.
Martinez, Barry, Pedro	Venezuela	A.B. 1948, Hendrix College	
Martinez, James Ralph	N.J.	Martin, Henry Francis Beaumont	D.C.
A.B. 1952, Carleton College		Martin, James Kenneth	Va.
Martinez, John William	N.J.	B.S. 1947, U.S. Naval Academy	
A.B. 1950, Carleton College		Martin, Jeffrey Neal	Maine
Mares, Joseph Charles	D.C.	A.B. 1950, University of Maine	
Mars, Cyril Jacob	D.C.	Martin, John Oliver	Va.
Mars, Forrest Edward, Jr.	Va.	A.B. 1951, Washington and Lee	
B.S. 1953, Yale University		University	
Marshak, John Douglas	Md.	Martin, John Peter	D.C.
Marsden, Edna	D.C.	A.B. 1952, The George Washington	
Marsden, Janet Lloy	Va.	University	
Marsch, Benjamin Franklin	Ohio	Martin, Julius Corpening III	D.C.
A.B. 1950, Ohio Wesleyan University		Martin, Keith Lynn	W.Va.
Marsh, David Monroe	Md.	Martin, Marjorie Lucile	Md.
A.B. 1951, Bowdoin College		Martin, Mary Lou	Va.
Marsh, Ernest Victor	Va.	Martin, Patricia Joan	D.C.
Marsh, Frank Eugene, Jr.	N.H.	Martin, Paul Kyler	D.C.
A.B. 1942, Clark University		Martin, Philip Joseph	N.Y.
Ed.M. 1949, University of New		Martin, Ralph Edward	Maine
Hampshire		A.B. in Govt. 1950, The George	
Marsh, Mary Henry	D.C.	Washington University	
Marsh, Samuel Shepard Dennis	D.C.	Martin, Robert Carl	Calif.
A.B. 1948, Yale University		A.B. 1950, University of California	
License 1950, Graduate Institute of		Martin, Shirley J.	D.C.
International Studies, Geneva,		Martin, Watt Nicholas	N.C.
Switzerland		LL.B. 1950, A.B. 1952, The	
Marth, William A.	Ohio	George Washington University	
Marth, Winston William, Sr.	Md.	Martinscheck, Helen Marie	Pa.
A.B. 1941, Wittenberg College		Martinscheck, Pauline Ann	Pa.
Marshall, Anilise	Va.	Martins, Sergid Ivan Carvalho	D.C.
Marshall, Barton Atlee	Va.	Martorana, Joseph James	Md.
B.S. 1951, University of Maryland		A.B. 1940, Brooklyn College	
Marshall, Barton Hirst, Jr.	Md.	M.S. 1944, New York University	
B.S. 1948, M.S. 1952, University of		Martowicz, Edward Thomas	Ohio
Maryland		Martz, Edsel Bryan	D.C.
Marshall, Frank Gilkerson	D.C.	B.S. 1950, Wilson Teachers College	
B.S. 1944, U.S. Naval Academy		Marvel, Jerry Wendell	Ind.
Marshall, Frank Stadden, Jr.	Va.	Marvin, Camilla	D.C.
Marshall, Mary Lane	D.C.	Marvin, Ruth Janet	D.C.
A.B. 1952, The George Washington	Va.	A.B. 1948, University of Nebraska	
University		Marvine, Toni	D.C.
Marshall, Robert Thomas	Md.	Mart, James Francis	D.C.
B.S. 1950, University of Scranton		Masarelli, Joseph Robert	D.C.
Marshall, Ruth	D.C.	Mash, Morris	N.Y.
A.B. 1924, St. Julien Ravenel	Va.	A.B. 1952, The George Washington	
LL.B. 1924, Virginia Military Institute		University	
LL.B. 1924, Harvard University		Maskaleris, Eva Chris	D.C.
Marshall, Willard Osborn	N.Y.	Mason, Billy Harold	D.C.
B.S. 1951, New York Agricultural		Mason, Harry Wesley, Jr.	Md.
and Mechanical Institute, Farmingdale		B.S. 1953, American University	
Marshall, James Russell	Va.	Mason, John Stuart	La.
B.E.E. 1949, The George Washington	Va.	A.B. 1952, Lynchburg College	D.C.
University		Mason, Lyman Gates	D.C.
		Mason, Norman Randolph, Jr.	Va.
		Mason, Roy Jerome	N.Y.
		A.B. 1953, Mexico City College	

Massa, Charlotte F.	D.C.	Maxey, Maggie B.	D.C.
Massas, Katherine Chris	N.I.	Maxson, Cleo Mae	D.C.
Massie, Samson	N.Y.	A.B. 1952, Salem College	Ma
Masson, Hilda Grey	N.C.	Maxwell, Betty Mae	D.C.
Masson, Sam William, Jr.	Tenn.	Maxwell, Richard Sanborn	Ohio
B.S. 1936, University of Tennessee		A.B. 1940, Marshall College	
Massey, Iris Entwistle	D.C.	Maxwell, William Abraham	Va.
A.B. 1925, Wheaton College		B.S. 1950, University of Pennsylvania	Ma
Massey, James Edward	D.C.	May, Jacqueline Leo	
Massey, Marvin	Mo.	May, Joan Elizabeth	Ma
Massey, Shirley Ann	Va.	Ph.B. 1947, University of Chicago	N.Y.
Mast, Joseph Moulder	D.C.	Mayberry, Grant Elmer	
Masters, Helen Crystal	Ky.	Maybud, Sid Ahmed	
A.B. 1952, University of Kentucky		LL.B. 1956, LL.M. 1957, University of Paris	D.C.
Masters, Robert Eugene	Ind.	Mayer, Matilda J.	N.Y.
B.S. 1917, LL.B. 1919, Indiana University		Mayer, William Scanlon	Kan.
Masterson, James Edwin	Ala.	Mayes, Ronald Wayne	
B.S. 1952, Berea College		B.S. in M.E. 1951, Kansas State College of Agriculture and Applied Science	Puerto Rico
Mastrantonio, Constantine Leonidas	D.C.	Maymi, Protasio	
Mastromichalis, Hippocrates	D.C.	A.B. 1949, The George Washington University	Colo.
A.B. 1948, West Virginia University		Maynard, Donald Edmunds	
Masucci, Carole Ann	N.Y.	B.S. 1950, Iowa State College	Vi
Masuda, Florence	Va.	Maynard, Elizabeth Jane	Va.
Matayoshi, Shuntaro	Hawaii	Maynard, Russell Hutton	
B.S. 1951, University of Maryland		B.S. 1954, U. S. Naval Academy	Fl.
Mate, Frank, Jr.	N.J.	M.S. 1950, University of California	N.Y.
A.B. 1952, Dartmouth College		Mayolo, Frank Louis	Mass.
Mateika, John Charles	D.C.	Mayosky, Joseph Frank	Ma
B.S. 1952, St. Louis University		Mayotte, Bernard	
Mather, Alexander Pokens	Va.	Mazeika, Benjamin	
B.S. 1951, University of Florida		B.S. 1950, University of New Hampshire	D.C.
Masters, Lala Wanda	Va.	Mazenderani, Abraham Khajavi	
Mathews, Cynthia Anne	D.C.	B.C.E. 1950, The George Washington University	Pa.
Mathews, Mary Cecilia	D.C.	Mazero, John Robert	
Mathews, Richard Lawrence	India	A.B. 1951, The George Washington University	Va.
Mathur, Krishen Dayal	D.C.	McAfee, Betty Allys	D.C.
Matlock, Bernard Vickroy		McAfee, Ruth Edith	Hawaii
B.S. 1950, University of Illinois		McAllister, Joseph Daniel	Ma
Matlow, Irwin	D.C.	McAnallen, Frances Gloria	Ma
Mason, Gilbert Louis	Va.	McAnallen, William Joseph	
Mason, Joanne Thompson	Va.	B.S. 1952, University of Maryland	Va.
Mason, Ivcko Rose	Utah	McAnelly, Shelton Bigler	N.J.
Matsunaka, Charles Yoneo	Colo.	B.S. 1942, Louisiana State University	Va.
A.B. 1952, University of Denver		McArdle, Thomas Joseph	Mass.
Mattreuci, Malcolm Gene	Nev.	McArdley, Richard Coppedge	
A.B. 1952, University of Nevada		McAuliffe, Philip Leo, Jr.	D.C.
Matthews, Hazel Delano	Va.	B.S. 1952, Boston College	Va.
Matthews, James Raymond	D.C.	McAvoy, Chinolm Clifford	Pa.
Matthews, Loren Allen	D.C.	McBride, Duane Lee	
A.B. 1949, Union College		McBride, Mary Elizabeth	
A.M. 1949, The George Washington University		B.S. 1947, University of Pennsylvania	
Matthews, Neely Focayth Jones	Va.	M.S. 1951, Catholic University of America	Del.
Matthews, Patrick Cabell	Va.	McBride, Willard Carlos	
B.S. 1951, University of Virginia		B.S. 1948, University of Maryland	Pa.
Matthews, Samuel Sheridan	D.C.	McCabe, James William	Mass.
Mattie, Janet	Conn.	McCabe, John Terrence	Pa.
Mattings, Judith Ann	Va.	McCabe, Mary Ellen	
Mattson, Melvin Earl	N.I.	McCafferty, Herbert Donn	D.C.
Mattson, Robert John	Calif.	A.B. 1952, Allegheny College	D.C.
Matturo, Marino Joseph		McCaffrey, George Matthew	N.C.
Maui, Merlin Harold		McCall, Betty Jean	Ma
A.B. 1949, Pacific Union College		McCall, Carol Noonan	W.Va.
Maugin, Grace Elaine	D.C.	McCall, Jeremy Charles	
Mayer, Pauline	Nebr.	A.B. 1950, University of Mississippi	
A.B. 1941, Municipal University of Omaha			
Mauzy, Jesse Lewis	Ma.		
Mavella, Joseph Augustino	D.C.		
Mavella, Phyllis Adam	Va.		
Mawhood, Samuel Allen			

McCardell, Joseph Martin	Pa.
McCarten, Charles Edward	D.C.
McCarten, Dennis Joseph, Jr.	Fla.
McCarten, Dennis Van Norman	R.I.
McCarthy, Edward John	D.C.
McCarthy, John Ernest	Va.
McCarthy, John Robert	
McCarthy, Lawrence Daniel	
McCartin, Matthew Joseph	
L.L.B. 1949, St. John's University	
McCarty, Clinton Gordon	
McCaslin, Nancy Hamilton	
A.B. 1952, University of Maryland	
McCauley, Donald Francis	Pa.
A.B. 1950, University of Pennsylvania	
McCauley, Frances Agnes	D.C.
McCauley, Paul James	Md.
McCauley, Genevieve	D.C.
McClary, Thomas John	D.C.
McClellan, Myles Stanford	Va.
B.S. in Ed. 1934, Pennsylvania State College	
McClellan, William Alfred	Md.
McClendon, William Thomas	Md.
McClenathan, Nell Louise	Pa.
McClellan, Curtis Victor	Miss.
McClellan, Enoch John	Pa.
A.B. 1951, Pennsylvania State College	
McClung, Harry Byron	Va.
McClure, Birtel Eugene	Va.
McClure, Guy Young	Ala.
McClure, John Alexander	D.C.
McClure, William Pendleton	Md.
B.S. 1940, University of Pennsylvania	
L.L.B. 1951, The George Washington University	
McConnell, Ann Marie	Pa.
McConnell, George Jewell	D.C.
McConnell, Paulena Scott	D.C.
B.S. 1920, Purdue University	
McConnell, Rodney David	D.C.
McConle, Henry Leonard	Md.
A.B. 1950, University of Texas	
A.M. 1951, The George Washington University	
McCorkle, Mary Ellen	Va.
A.B. 1946, The George Washington University	
McCorkle, Mary Smith	Va.
McCormack, George Robertson	Md.
McCormack, John Joseph, Jr.	Va.
McCormack, David Clement	La.
B.Mus. 1951, Southeastern Louisiana College	
M. Mus. 1952, Northwestern University	
McCormick, Mary Law	Va.
McCorker, James Patrick	Va.
McConkey, Robert Edgar	D.C.
B.S. 1950, The George Washington University	
McCoy, Albert Dod	Va.
A.B. 1951, Princeton University	
A.B. 1946, Stanford University	
McCoy, Charles France	D.C.
McCoy, Ralph Clinton	Va.
McCoy, Richard Maurv	Va.
McCracken, Dora Bradshaw	Va.
McCracken, Kelly Thomas, Jr.	Va.
McCrory, Renee	N.C.
McCreight, Charles Edward	D.C.
B.S. 1948, M.S. 1950, The George Washington University	
McCrone, Thomas Joseph	Pa.
McCubbin, James Melvin	D.C.
McCubbin, Charles Fox	Fla.
McCulloch, Douglas Collier	R.I.
McCullough, Edward William	D.C.
McCullough, James Matthew	Va.
B.S. 1951, M.S. 1952, Pennsylvania State College	
McCullough, Joan Mary	Md.
McCullough, Richard Cornwell	Md.
McCully, Cyrus Harold	Va.
A.B. 1934, A.M. 1935, Colorado State College of Education	
McCune, Frederick Kenneth	Pa.
B.S. 1951, Grove City College	
McCurry, William Smith, Jr.	Md.
B.S. 1948, University of South Carolina	
McDaniel, Clyde Lowell	D.C.
McDaniel, Elizabeth Rigley	D.C.
McDaniel, James	La.
McDaniel, James David	D.C.
McDaniel, Loreen Webb	Va.
McDavitt, Margretta Louise	D.C.
McDermott, Carol Jean	D.C.
McDermott, Francis Owen	Neb.
McDonald, Amie Charlene	D.C.
McDonald, Ethel Raynor	Va.
A.B. 1949, University of Hawaii	
McDonald, Frank Kevin	D.C.
B.S. 1946, University of Scranton	
McDonald, John Warlick	Va.
B.S. 1915, University of Kentucky	
McDonald, Marvin Bruce	Md.
McDonald, William Barba	Md.
B.S. 1952, University of Maryland	
McDonald, William Franklin	Md.
McDonnell, Donald Anthony	D.C.
McDonough, James Albert	Md.
B.S. 1913, Juniata College	
M.S. in Ed. 1940, Pennsylvania State College	
McDonough, Madeline Agnes	D.C.
McDonough, Raymond John	N.Y.
L.L.B. 1951, The George Washington University	
McDougall, Marie Rieter	Md.
McElron, John Francis	N.Y.
McElwee, Charles Richard	W.Va.
A.B. 1949, Glenville State College	
McElroe, John Patrick	N.Y.
McEntroe, Timothy Dana	Md.
McEntyre, Harry K.	Ala.
McEvaddy, James Francis	N.Y.
McEver, Mary Lou	Va.
A.B. 1948, Georgia State College for Women	
McEwen, Marjoul	D.C.
McFadden, David Carlyle	Md.
McFarland, Alice Blackwell	D.C.
McFarland, Elizabeth Frances	Va.
B.S. in Ed. 1953, Madonna College	
McFarlane, Robert William	D.C.
McFolin, Roy Lee	Tenn.
McGandy, Edward Lewis	Md.
B.S. in Eng. 1951, The George Washington University	
McGarry, Alan Reading	N.Y.
McGarvey, Paul Jerome	D.C.
McGaughey, Mary C.	Wis.
Ph.B. 1949, Marquette University	
McGee, Charles Edward	Md.
Ed.B. 1914, Northern Illinois State Teachers College	

McGee, Kathleen Dillon	Va.	McKay, Robert James	Va.
A.B. in Govt. 1951, The George Washington University		McKean, William John	Va.
McGee, Robert Phillip	Va.	McKenna, Douglas Robert	N.Y.
B.S. in C.E. 1950, Virginia Polytechnic Institute		B.M.E. 1953, Rensselaer Polytechnic Institute	D.C.
McGeehan, Hugh Vincent	D.C.	McKeller, Franklin Norman	Ill.
McGinn, Byron Paul	D.C.	McKelligott, Carol	Md.
McGinn, Margaret Townsend	Md.	McKenna, Gerard Edward	D.C.
McGinnis, Dwight Ridgway	N.Y.	McKenna, Robert Thomas	Tenn.
McGinty, John Joseph	D.C.	McKenney, Margaret Earle	Va.
A.B. 1926, Pennsylvania State College		McKenzie, Bonnie Woodbury	D.C.
L.L.B. 1931, Boston University		McKenzie, Jacques William	Va.
L.L.M. 1941, Georgetown University		B.S. 1953, University of Maryland	
McGlaxon, Shirley Ann	Okla.	McKenzie, James Williams	Va.
McGloin, James Thomas	Md.	B.S. in C.E. 1949, Purdue University	
McGlynn, Gerald Edward, Jr.	Va.	McKeon, Alfred Jerome	
B.S. in Eng. 1951, Iowa State College of Agriculture and Mechanic Arts		A.B. in Govt. 1949, The George Washington University	Ohio
McGoire, Kenneth James	D.C.	McKinley, William	W.Va.
McGolrick, Isabel	D.C.	B.S. 1947, U.S. Naval Academy	Ala.
McGonachie, Gale Root	Kans.	McKinney, Clyde Livingston	Okla.
McGonagle, William Edward	Maine	McKinney, Ernest Euclid	
A.B. 1939, College of the Holy Cross		McKinney, Garland Young, Jr.	S.C.
McGonigle, Catherine Ann	Pa.	B.S. 1952, University of Oklahoma	
McGough, Thomas Francis	Va.	McKinney, Martha Haynes	Md.
M.D. 1918, The George Washington University		A.B. 1939, Furman University	D.C.
McGowan, Joseph Charles	Va.	McKinney, Wade James	Md.
B.S. 1947, Pennsylvania State College		McKinney, William Butler	D.C.
McGowan, Robert James	Mass.	B.C.E. 1941, University of Maryland	
McGrath, Bernice Anne	D.C.	McKinzie, Daniel Joseph, Jr.	Md.
McGrath, John Joseph, Jr.	S.D.	McKirkick, Mary Lynette	Va.
McGrath, Mabel Leahy	N.Y.	McLain, John David	
McGrath, Robert Vincent	Mass.	B.S. in M.E. 1950, College of Notre Dame of Maryland	Va.
McGrath, William James, Jr.	Pa.	McLane, Henry Earl, Jr.	Pa.
B.S. 1948, University of Scranton		McLaughlin, Charles Thomas	D.C.
McGraw, Doonan Dwight	Va.	McLaughlin, James Joseph	D.C.
B.M.E. 1948, Georgia Institute of Technology		McLaughlin, Joann Carol	Mass.
McGraw, Forrest Ross	Md.	McLaughlin, Martin Joseph	Va.
McGraw, Margaret Rose	D.C.	McLaughlin, Mary Macmillan	
McGraw, Richard Thomas, Jr.	Md.	McLaughlin, Turner Sheppard	Md.
McGregor, Rob Roy	D.C.	B.S. 1945, Mississippi College	
McGregor, Wallace Hulley	D.C.	McLean, Max C.	Ark.
McGregor, Charles Jackson, Jr.	Va.	B.S. 1951, U.S. Merchant Marine Academy	Md.
A.B. 1952, The George Washington University		McLees, John Skelton	Va.
McGuire, Charles Francis	Pa.	McLennan, Marilyn Wallace	Va.
McGuire, Kenneth James	D.C.	McLeod, Barbara Ann	D.C.
McGuire, Patrick Edward	D.C.	McLeod, Gerald Alan	
McGuire, William Francis	D.C.	McLone, Henry E.	
A.B. 1949, Catholic University of America		A.B. 1946, Swarthmore College	D.C.
M. Hale, Austin Patrick	Va.	A.M. 1947, University of Pennsylvania	
McHenry, Helen Margaret	D.C.	McLynn, James Michael	Va.
McHenry, William Parke	D.C.	A.B. 1950, The George Washington University	Mass.
McInerney, John Stuart	Md.	McMahon, Helen Claire	
McIntire, Patrice Velma	Maine	McMann, James Aloysius	Va.
McIntire, Ralph Wellington, Jr.	Md.	A.B. 1941, Georgetown University	D.C.
B.S. 1949, University of Pittsburgh		McMann, Robert Maury	N.Y.
McIntyre, Francis Joseph	W.Va.	McMann, William Howard	
McIntyre, James Byron	Md.	McMann, Edward John	Pa.
A.B. 1931, Mercy Harvey College		B.S. 1942, St. John's University	Mass.
McIsoken, Charles Preston	S.C.	McMann, Margaret Eleanor	Ala.
McKamev, William	Tenn.	McMann, Reginald Paul	
M. Kay, Emerald Raleigh	Mo.	A.B. 1952, Bowdoin College	Va.
B.S. 1942, Northwest Missouri State College		McMath, Raymond Neal	
McKay, Rachel Ruth	Pa.	B.S. 1952, University of Alabama	
B.S. in Ed. 1941, Pennsylvania State College		McMillan, William Gooding	N.Y.
		B.S. 1953, University of South Carolina	
		McMullen, Alexander Ross	

McMillen, Frank Day B.S. 1946, U.S. Naval Academy	Mo.	Meadows, Miles Whitman L.I.B. 1947, John Marshall College	Md.
McMurray, Delzell Barthell	Va.	Meadows, Wallace Houston	Kans.
McNab, Hugh John	Va.	Meador, Glenn B. B.S. 1952, Illinois Technological Institute	Ill.
McNamara, Richard Vaughan	Iowa	Moughler, Richard Allen	Md.
McNamer, Gilbert Wilson	D.C.	Mouns, Edward Hector	D.C.
McNary, William Edward	D.C.	Mouns, Grace Joan	D.C.
McNash, James Nelson A.B. 1951, West Virginia University	W.Va.	Mours, John Kenneth, Jr.	D.C.
McNeal, John Knight A.B. 1952, University of Miami	Va.	Mours, William T.	Va.
McNeal, Martha Deane	Va.	Mebane, Banks Holt B.S. 1947, University of North Carolina	Md.
McNeely, John Joseph	Va.	M.S. 1951, The George Washington University	
McNeely, Mary Ann	Va.	Meder, Carl	Va.
McNee, Harold Graham B.S. & F.S. 1950, Georgetown University	Calif.	Meder, Frank	Mass.
McNeil, Donald Eugene A.B. 1950, A.M. 1951, University of Michigan	Mich.	Medina, William Antonio	Md.
McNeil, Doris Matthews A.B. 1948, The George Washington University	Va.	Meenan, William Lloyd B.S. 1941, Alabama Polytechnic Institute	Va.
McNeil, Rita C. B.S. in Ed. 1945, Boston College	Mass.	Meek, Donald Everett	Ind.
McNeill, Elizabeth Louise	D.C.	Meeks, Anna Ruth A.B. 1926, Goucher College	Md.
McNeill, William David, Jr.	Pa.	L.I.M. 1947, University of Maryland	
McNelis, James Ralph	W.Va.	Meenen, Elwyn Lester A.B. 1942, Washington University	Mo.
McNoldy, Earl Henry	Md.	Meers, Josephine Marie	Ind.
McNulty, Eileen Marie	D.C.	Meggs, Kathleen Dillon A.B. in Govt. 1951, The George Washington University	Va.
McNulty, Marjane Garner	Md.	Megill, Harry Newlin, Jr.	D.C.
McNulty, Philip Lambert	Iowa	Megumma, Walter Marplee B.S. 1946, U.S. Naval Academy	Fla.
McPhail, Christine Conoly A.B. 1925, Flora Macdonald College	D.C.	Melburger, George Joseph A.B. and L.I.B. 1952, Georgetown University	Mo.
McPherson, Cora I.	Mont.	Meier, Helen Emma	Nebr.
McPherson, James Joseph A.B. 1951, University of Miami	D.C.	Meier, Julius Conrad B.S. in F.E. 1950, Clarkson College of Technology	Va.
McPherson, Trent Otto, Jr.	Md.	Meier, Robert Willy	D.C.
McQuinn, Robert Hunter A.B. 1942, Bridgewater College	W.Va.	Meikle, Louise Chalice	D.C.
M.S. 1949, New York University		Meiser, Charles Edward B.S. & F.S. 1952, Georgetown University	Fla.
McQuarrie, Howard Gert	Utah	Meiser, Marian Lehman	Fla.
McQuinn, John Joseph Maxwell	D.C.	Melard, Conception Roland B.S. in F.E. 1952, University of Wisconsin	Md.
McQuinn, William Thomas A.B. 1947, Emory and Henry College	Va.	Melhorn, George Ira A.B. 1951, Gettysburg College	Va.
McQuinn, Lionel Thiel B.S. 1948, U.S. Naval Academy	Ind.	Mellon, Dorothy A.B. 1928, Geneva College	Pa.
McQuinn, John Joseph	Md.	Meller, George Benson A.B. 1947, Colorado College	Kans.
McTigue, William Edward B.S. 1950, University of Massachusetts	Mass.	M.S. 1951, Kansas State College	
Melahn, Paul Edward A.B. 1946, Providence College	Va.	Melvin, Clarence Ace B.S. 1948, U.S. Naval Academy	Ala.
M.Vay, Marion E.	D.C.	Membert, Joan Elaine	Md.
M.Vay, Katherine Jane	Ill.	Memery, Alvin Lee	Va.
M.Vay, June	Md.	Memard, Donald John	Mass.
Meadam, Vennor J., Jr. B.S. 1944, Brigham Young University	Md.	Mendler, Bruce Stephen	D.C.
Mead, Robert Henri A.B. 1948, Hunter College	N.J.	Mendelson, Sidel Ann	D.C.
Mead, Gloria E. Loh	D.C.	Menne, Lillian Carol	D.C.
Mead, Irving Walden A.B. 1948, Grinnell College	Ill.	Mensch, Phyllis Diane	D.C.
Mead, William Spruicer	D.C.	Menzemer, Charles LeRoy B.S. 1950, Missouri School of Mines and Metallurgy	Md.
Mead, Robert Eugene A.B. 1952, University of Michigan	D.C.	Menzie, Hermine Katherine A.B. 1952, A.M. 1954, University of Chicago	D.C.
Mead, Marion Virginia A.B. 1942, Barnard College	N.Y.		
Mead, Norward Arthur	Md.		
B.S. 1924, Virginia Military Institute			
Meadow, Betram Gene	Calif.		
Meadows, Clarence Finley	W.Va.		

Merser, Abbie Belle	Fla.	Miskin, Anthony Andrew	N.Y.
Messer, Margaret Esther	Va.	B.S. 1952, Fordham University	D.C.
B.S. 1937, M.S. 1939, A.M. 1945, University of Illinois		Michael, Alfred Joseph	Mass.
Messinger, Charles Eugene	D.C.	Michael, Louis Paul	D.C.
Messinger, James Irene	D.C.	A.B. 1952, Brown University	
A.B. 1949, University of Maryland		Michael, Richard Morton	
Meredith, Lynn Schenck	D.C.	B.S. 1948, Bates College	
B.S. 1944, Pacific University		A.M. 1951, The George Washington University	D.C. N.J. Pa.
Mercin, Andrea Angelo	D.C.	Michalek, Joseph Leonard	
Merrin, Anne Whitfield	Mass.	Michals, George Spiros	
A.B. 1936, The George Washington University		Michanowicz, Francis Michael	
Merride, Harold Francis	Ill.	B.S. in Ed. 1952, Pennsylvania State Teachers College, Mansfield	Miss.
L.I.B. 1921, A.B. 1952, The George Washington University		Michaud, John Byron	
Merkler, Nathan Lowell	Md.	A.B. 1950, University of Minnesota	D.C. Fla.
Merritt, R. H.	D.C.	Michel, Margaret C.	
Merritt, James Forbes	N.Y.	Michell, Robert William	D.C.
Merritt, Georgiana Kay	D.C.	B.M.E. 1950, New York University	
Merritt, Richard Matius	Ill.	Michels, John Francis, Jr.	
B.S. in E.E. 1950, Milwaukee School of Engineering		B.S. in M.E. 1951, University of Pennsylvania	Mont. Md.
Merritt, Richard Spear	Md.	Michels, Vern Edward	
B.S. 1942, University of Pennsylvania		Michelson, Paul Frederick	
Merrifield, Robert Brent	Va.	B.E.E. 1953, The George Washington University	Del.
A.B. 1942, University of Oregon		Michini, Louis Joseph	
A.M. 1950, University of Chicago		A.B. 1941, University of Delaware	
Merritt, John Chester	D.C.	M.S. 1940, The George Washington University	D.C. Pa. Tex. Va.
A.B. 1950, University of Maryland		Michelson, Charlotte Sue	D.C.
Messervy, Robert Hilton	D.C.	Micho, Helen Louise	
A.B. 1941, Dartmouth College		Middlebrooks, Suzanne	
Messow, Barbara Jean	D.C.	Middlebrooks, Thomas A., Jr.	
Messow, Harold Enah	D.C.	Middlebrooks, James George	
Messler, Dorothy Alverta	D.C.	Middleton, James George	D.C. Ill. Pa.
A.B. 1949, Elizabethtown College		B.S. 1950, University of Oregon	
Messersmith, James Carl	Mo.	Midkiff, Charles Robert, Jr.	
A.B. 1943, University of Missouri		Midland, Marvin Gilbert	
A.M. 1951, The George Washington University		Miele, Albert John	N.Y. D.C. Md.
Messick, Vernon Delaney	D.C.	B.S. 1950, Georgetown University	
Messick, William Lee	Md.	Mignone, Phyllis	
Messing, Howard Hartig	Md.	Mihailovic, Milica	
Messinger, Joseph Louis, Jr.	Maine	Mika, Leonard Aloysius	Va. N.Y. D.C. Pa. Va. Ill. Md. D.C. D.C. Va. D.C.
A.B. 1951, The George Washington University		B.S. 1947, M.S. 1949, University of Michigan	
Mettner, William Henry, Jr.	Md.	Mikalauskas, Francis	
Mettner, William Joseph	Va.	Mikulich, John Louis	
A.B. 1942, University of Pittsburgh		Mikulka, Mary Helen	
Metzler, Mary Ellen	Md.	Mikusinski, Wilhelmina Mae	
Metzger, Helene Michelle	Va.	Milam, Joan Frazier	
A.B. 1952, The George Washington University		Milani, Dean Lawrence	
Meyers, Yvonne Therese	Ariz.	Milano, Dominick Joseph, Jr.	
Meyah, Georgetown	Ky.	Milavic, Munsif	
A.B. 1950, Randolph-Macon Woman's College		Milavic, Pava	
A.M. 1952, Columbia University		Milene, Marcet H.	
Mew, Vera Ellen	Ga.	Miles, James Russell, Jr.	
A.B. 1949, University of Georgia		Milestone, Gordon Knipsaw	Va.
Meyer, Calbot Willister	Md.	B.S. 1949, M.S. 1951, Massachusetts Institute of Technology	
Meyer, Carolyn Wagner	D.C.	Miley, Charles Edward	D.C.
A.B. 1953, The George Washington University		B.S. 1955, Roanoke College	
Meyer, Charles Fredrick	Va.	Miley, James Barrett	D.C. Pa. D.C.
Meyer, Elizabeth Anne	Va.	A.B. 1926, University of Wisconsin	
Meyer, Susan E.	Va.	Milice, Teresa Elizabeth	
Meyer, Yarn Darrel	Md.	Milione, Lillian Lucy	
Meyers, Francis deSales		Miller, Russell Ward	Md.
B.S. 1950, Boston University		A.B. 1950, University of California	
Meyers, Lewis Arthur	D.C.	Miller, Abraham	
Meyerson, Theodore Leroy	D.C.	Ph.D. 1953, University of Maryland	
		B.S. O.D. 1950, Northern Illinois College	Va.
		Miller, Allen Howard	

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Students Registered		531
Miller, Alvin		
Miller, Ann Winn		
A.B. 1951, Bryn Mawr College		
Miller, Barbara Lee		
Miller, Carolyn Ann		
A.B. 1952, The George Washington University		
Miller, Charles William, Jr.		
Miller, Clara Richard		
B.S. 1950, Ohio State University		
M.B.A. 1953, University of Michigan		
Miller, Gloria Catherine		
Miller, Dana Prescott, Jr.		
Miller, David		
Miller, David William		
Miller, Donald George		
Miller, Doris Elaine		
A.B. 1949, University of Minnesota		
Miller, Donis Messenger		
Miller, Dorothy Ann		
Miller, Edith Romay		
B.S. 1945, University of Idaho		
L.L.B. 1946, The George Washington University		
Miller, Gerald Joseph		
A.B. 1952, The George Washington University		
Miller, Gladys L.		
Miller, Hannel McKown		
Miller, Hugh Michael, Jr.		
Miller, Jack Wessel		
Miller, James Garvin		
B.S. 1949, Rouse College		
Miller, James Houseworth, Jr.		
Miller, James Thomas		
Miller, Jeannette Delores		
Miller, John Frederick		
A.B. 1951, University of California at Los Angeles		
Miller, John Henry		
Miller, Julia May		
Miller, Keith High		
A.B. in Govt. 1950, The George Washington University		
Miller, Kenneth Lyall		
B.S. in E.E. 1951, Tufts College		
Miller, Margaret Elizabeth		
A.B. 1948, Bryn Mawr College		
Miller, Mary Florence		
B.S. 1952, University of Maryland		
Miller, Mary Louise		
Miller, Melvin Lloyd		
Miller, M. Earl Sanford		
Miller, Mildred Rosemary		
Miller, Morrell Alfred		
A.B. 1945, A.M. 1950, Ohio State University		
Miller, Norman Van		
Miller, Paul		
B.S. 1949, Paul Jones Jr.		
A.M. 1951, Mississippi State College		
Miller, Phyllis Patricia		
B.S. 1952, Tufts College		
Miller, Richard Eugene		
A.B. 1949, The George Washington University		
Miller, Richard Glen		
B.S. 1949, West Virginia University		
Miller, Richard Maxwell		
A.B. 1950, Brown University		
D.C.	Miller, Robert Allen	Fla.
Va.	A.B. 1952, Duke University	
D.C.	Miller, Robert Paul	
Va.	Miller, Robert Howison	
	Miller, Ronald B.	
	Miller, Ronald William	
	Miller, Ruth Zollinger	
	Miller, Sanford Marvin	
	Miller, Sara Lane	
	Miller, Susan Elizabeth	
	Miller, Sherman	
D.C.	A.B. 1949, Queens College	
Va.	Miller, Stanley Ross, Jr.	
D.C.	Miller, Veronica Agnes	
Va.	B.S. 1947, University of Michigan	
D.C.	Miller, Virginia Burke	
	Miller, Wayne S.	
N.Y.	A.B. 1949, Sacramento State College	
Va.	M.S. 1950, Iowa State College of Agriculture and Mechanic Arts	
Idaho	Miller, Wilbert Thomas, Jr.	
	B.S. 1949, University of Maryland	
	Miller, Wilbur Oscar, Jr.	
	Miller, William	
D.C.	A.B. 1943, College of the City of New York	
	Ph.D. 1948, University of Pennsylvania	
Ohio	Miller, William Townsend	
Va.	Miliken, Ramon Allen	
D.C.	B.S. & F.E. 1950, Northeastern University	
Md.	Milloy, Robert Duncan	
Va.	B.S. 1945, U.S. Naval Academy	
	Mills, Bradford	
Va.	A.B. 1943, Princeton University	
D.C.	Mills, David Everett	
Md.	A.B. 1950, University of Delaware	
Calif.	Mills, Donald Lee	
	Mills, George F.	
	Mills, Gitta	
D.C.	Mills, Harry A.	
Iowa	Mills, Hayden William	
Md.	B.S. 1950, University of Kentucky	
	Mills, Hilda Johnston	
	A.B. 1946, LaGrange College	
N.Y.	Mills, Katharine Joyce	
	A.B. 1950, The George Washington University	
D.C.	Mills, Ruth Annette	
	Mills, Sarah Louise	
	Milox, John Francis	
	A.M. 1941, Dartmouth College	
Va.	A.M. 1942, Columbia University	
	Minstead, Vivian Corbela	
Md.	Mito, William Edward	
	Milton, Mary Elizabeth	
	A.B. 1953, The George Washington University	
Md.	Milton, Mary Oneida	
Ohio	Monard, William Douglas, Jr.	
	B.S. 1951, Queens College	
Va.	Moor, Ernest Henry, Jr.	
Va.	Moor, Amelia Katherine	
	Mosler, Whitney Sheldon	
	Munkoff, Charlotte Hilda	
	B.S. 1947, University of Maryland	
D.C.	Minneman, Bea Marie	
	Minor, Sophia Crouch	
	A.B. 1952, The George Washington University	
D.C.	Minsky, Hershel Seymour	
	Mintz, Irene	

Mirabito, John Arnold	N.C.	Mothut, Meredith Elizabeth	Va.
A.B. 1941, Wyke Forest College		A.B. 1940, The George Washington University	N.D.
Miraflores, Nasser	D.C.	Mohsen, Lili-Alice	
A.B. 1948, University of Teheran		B.S. 1937, The George Washington University	Va.
Mishore, Robert Joseph	D.C.		D.C.
Moschler, H. Robert	Idaho	Mohr, Casper Frank	Pa.
Mitchell, Americas	Md.	Mohr, Marvin Francis	Md.
A.B. 1944, Vanderbilt University		Mohr, Mohamed Abdel Fattah	D.C.
Mitchell, Anna Floyd	Md.	Mosier, Roy McGregor	Va.
Mitchell, Arthur Ray	D.C.	Moskowitz, Anne Marie	
Mitchell, Bernice Lillian	D.C.	Moshell, Salvadore	
Mitchell, Christine Mae	D.C.	B.S. 1948, Colorado Agricultural and Mechanical College	Pa.
Mitchell, Dorothy Lee		Mott, Dorothy Elizabeth	N.J.
B.S. 1947, University of Maryland	Va.	Mott, Robert Edward	
Mitchell, Elizabeth Jane	Va.	A.B. 1951, Lebanon Valley College	Pa.
Mitchell, Eugene Leonard		Moloney, John Bromley	
A.B. 1944, Boston University		B.S. 1947, Tufts College	
A.M. 1948, Columbia University	D.C.	M.S. 1953, The George Washington University	N.Y.
Mitchell, Helen Imogene	D.C.		
Mitchell, Mahmud Littleton	Va.	Moltchan, Rita Mae	
Mitchell, Mary Virginia	D.C.	Moltz, Arnold	
Mitchell, Marie Rose		B.S. 1951, College of the City of New York	D.C.
A.B. 1942, Middlebury College	Va.	Moltz, Lila Cowin	
Mitchell, Marilyn Ruth	D.C.	B.S. in Ed. 1953, College of the City of New York	Md.
Mitchell, Nancy Nield	Md.		Va.
Mitchell, Robert Glen	Va.	Monahan, Mildred Aubrey	
Mitchell, Robert Warren	Va.	Monahan, Thomas Vincent	
Mitchell, Sarah Anne		B.S. 1947, U. S. Military Academy	
A.B. 1941, Louisiana State Normal College		LL.B. 1951, University of Virginia	Md.
A.M. 1948, Louisiana State University		Monasterski, Edward	Va.
Mitchell, Shirley Louise	Md.	Mondloch, Marguerite Mignonne	
Mitchell, S. Elizabeth	Pa.	A.B. in Govt. 1952, The George Washington University	D.C.
A.B. 1946, Marywood College		Mondschein, Earl Jay	
Mitcher, James Reynolds	N.Y.	A.B. 1951, The George Washington University	D.C.
Mittleman, Dorothy Ann	Md.		D.C.
Mittleman, Sally Ruth	Pa.	Monfero, Veronica M.	Va.
A.B. 1951, Wilkes College		Monks, Amelia Ruth	
Mittle, Charles Andre	Mass.	Monroe, Charles Stephen	
Mixon, Berle Wynelle	Texas	B.S. 1930, Virginia Polytechnic Institute	D.C.
Mixon, Myrtle	Ohio	Monroe, Eloise Lindsay	
Miyawaka, Kenzi	Md.	A.B. 1951, A.M. 1952, The George Washington University	Md.
Muelle, Fenton Vivian		Monroe, Harold Jay	
A.B. 1947, Washington Missionary College		A.B. 1951, Miami University	N.J.
Mozle, Elise Wotten	Md.	A.M. 1952, Columbia University	D.C.
A.B. 1949, Goucher College		Monroe, Jeanetta Woodley	
Mozzad, Irady	N.Y.	Monsees, Edna Kury	Md.
Mudley, Weston Summerfield	D.C.	B.S. 1930, University of Missouri	
Mudley, Thomas Eugene	Ill.	Monuma, Edwin John	Ill.
Muehl, Albert Jay	D.C.	A.B. 1953, Calvin College	D.C.
B.S. 1948, M.S. 1949, The George Washington University		Monson, Donald Wesley	Ky.
Mue, Janet Gable	Md.	Montague, Florence Louise	
B.S. 1941, University of Minnesota		Montague, William Eugene	
Mue, Robert Melvin	Fla.	A.B. 1950, A.M. 1952, The George Washington University	
Mueh, Herbert Irwin	N.Y.	Montgomery, Margaret Mary	
Mueller, Marian	N.C.	Montgomery, Robert Hayes	
B.S. 1933, The George Washington University		Montgomery, Virgil Lee	
Mueller, William Frederick	D.C.	Montzka, Arthur Dale	
Muerman, Constance Levenson	D.C.	Mooser, Marian Rae	
A.B. 1948, The George Washington University		Moon, Chul Soon	
Muffart, Jane Lee	D.C.	Mooney, James Joseph	N.Y.
Muffert, Charles Henry, Jr.	Va.	LL.B. 1950, New York University	Va.
Muffert, Fredrick Rudolph	D.C.	Mooney, Gerald Edward	
Muffert, Paul Frederick	Va.	Mooney, Louise Swartz	
Muffette, Deborah Sanford	Conn.	Mooney, Stewart Walter	
A.B. 1952, Wellesley College			

Moore, Bennie Neil B.S. 1951, University of Alabama	Ala.	Moreno, Teresa	D.C.
Moore, Bill Joe	Iowa	Moreno, Verne Josephine	D.C.
Moore, Blanche M.	D.C.	Moret, Alfred Thorsfield	Mo.
Moore, Bobbie Ruth	D.C.	Morgan, Charles Henry, Jr.	Calif.
Moore, Carlisle Martin B.S. 1950, University of California	Calif.	Morgan, Donald Thomas	D.C.
Moore, David Lewis	D.C.	Morgan, Eleanor Humphrey	Md.
A.B. 1936, Harvard University	D.C.	Morgan, Margaret Lois	D.C.
L.L.B. 1952, The George Washington University		B.F.A. 1957, Syracuse University	
Moore, Douglas Meek		Morgan, Nancy Lu	Va.
A.B. 1949, L.L.B. 1951, University of Utah	Utah	Morgan, Robert Eltonzo B.S. in Eng. 1950, The George Washington University	Md.
Moore, Earl Kenneth		Morgan, Robert Stone	Tenn.
Moore, Elmer Lee	Tenn.	Morgan, Walter Albert	D.C.
Moore, Hazel Bartlett	Md.	Morget, Charles Oscar	Md.
A.B. 1921, University of Wisconsin	D.C.	Morget, Clarence Abner	Md.
Moore, Henry McDonald		Mori, Kinsko	Japan
A.B. 1951, The Citadel	S.C.	Moriarty, Thomas John A.B. 1949, College of the Holy Cross	Va.
Moore, Howard Neil		Morin, Joseph Evaris Proctor A.B. 1947, Stanford University	Calif.
L.L.B. 1942, University of Arkansas	Mo.	Morley, John Royal A.B. 1949, Marietta College	N.J.
Moore, James Edward	D.C.	Morlock, Harry Kenneth A.B. 1950, The George Washington University	D.C.
Moore, James Increase	Fla.	Mornmstan, Richard Donovan	Va.
Moore, James Reardon	Va.	Moroni, Mary Argentina A.B. 1950, Danburton College of Holy Cross	Va.
Moore, Joan Goodkind	D.C.	Moro, Walter Stanley	Md.
Moore, Joseph Prudhomme	Md.	Morrell, Roger Merrill B.S. 1950, Haverford College	Md.
Moore, Mabel E.	Kans.	Morris, Buena Vista	Md.
Moore, Margaret Rachel B.S. in Ed. 1940, Kansas State Teachers College, Pittsburg		Morris, Cornelia Jane	Md.
Moore, Marjorie Anne A.B. 1946, Bethany College	Va.	Morris, Philip Charles	Pa.
A.M. 1949, University of Wisconsin	D.C.	Morris, Richard Francis	D.C.
Moore, Morrow Harris		Morris, Robert Louis A.B. 1951, A.M. 1952, Boston University	Mass.
Moore, Patricia Anne	Va.	Morrison, Betty Ruth A.B. 1948, University of Miami	D.C.
Moore, Richard Gerald A.B. 1951, Shepherd College	D.C.	A.M. 1951, University of Georgia	
Moore, Robert Milton	W.Va.	Morrison, James Robert B.S. in Eng. 1951, The George Washington University	D.C.
Moore, Ruth G. A.B. 1945, Doane College	Md.	Morrison, Julie Elizabeth	Va.
Moore, Sally Marlene	D.C.	Morrison, Leonard Martin	D.C.
Moore, Sarah Frances		Morrison, Maria Irene A.B. 1952, University of Minnesota	Minn.
Moore, Suzanne B.S. 1951, University of Maryland	Ind.	Morrison, Robert Eugene B.S. 1950, High Point College	D.C.
Moore, William Minges A.B. B.S. 1952, Florida Southern College	D.C.	Morrison, Robert Real A.B. in Ed. 1950, The George Washington University	Md.
Moore, Willis Woods, Jr.	Md.	Morrison, Thomas Lloyd	Md.
Moore, Wilson Howard		Morrison, William Fitzgerald	N.Y.
Moorehead, Doran McFeat A.B. 1942, Mount Holyoke College	W.Va.	Morrison, Frank Douglas	Pa.
A.M. 1945, B.F.A. 1950, Columbia University	Va.	Morrow, Eleanor K. B.S. 1929, Columbia University	Va.
Moorehead, Joseph William, Jr. A.B. 1948, American University	S.C.	Morrow, Ralph Clifford	Mich.
A.M. in Ed. 1949, The George Washington University		Moss, Saved Abdel Hamid A.B. 1952, American University, Cairo	Egypt
Moorehead, Patricia Ann B.S. 1946, Randolph-Macon College	Va.	Mortimer, Stanley Irwin B.S. 1951, University of Maryland	Md.
Moore, John Wadsworth	Md.	Morton, George R. W.	D.C.
Moore, Joe Antonio		Morton, Mary Alice B.Mus. 1945, Coe College	D.C.
Moore, Jose Luma e Silva de	D.C.	Morton, Richard A.	Va.
Moran, Andrew John	D.C.	Mosel, Kyra Barbara	Va.
Moran, David Ramsey	D.C.		
Morand, Francis Leo	Md.		
Morand, Lucille Vivian	D.C.		
Morand, Alice Priscilla	D.C.		
Morand, Chester Martin	N.Y.		
Morand, O. Dorothy	D.C.		
Moreno, Eliza	D.C.		
Moreno, Herbert	D.C.		

Moseley, Alice Sydney B.S. 1941, Madison College	Md.	Mudarra, Joseph George A.B. 1952, Boston University	Va.
Mosley, Edward Carleton B.S. 1930, Lyndeburg College	Va.	Muelhouse, William	D.C.
A.M. 1931, The George Washington University		Mueller, Kunigunde Marie	N.Y.
Moser, Bernice	Mo.	Mueller, Stanley Adolph Julius, Jr.	Calif.
Moser, Diane Thompson A.B. 1940, University of Maryland	D.C.	A.B. 1952, University of California	
Moser, Ernest Cleveland	Va.	Muench, Peter Harris B.F.S. 1949, University of Southern California	D.C.
Moser, Eugene Bruce	Md.	Muenchow, William Ferdinand A.B. 1938, University of Wisconsin	N.M.
Moses, Hans	Va.	Mugleston, Norman Edward	Md.
Moses, William Lee	Ga.	Mugmon, Melvin Malcolm	Va.
Mosher, Edith Schaffner	Va.	Muhonen, Elmer William A.B. 1945, University of Minnesota	Md.
Moskowitz, Kathleen Beatrice	D.C.	Mukasa, George Mitsugi A.B. 1942, University of Washington	D.C.
Moskowitz, William A.B. 1951, The George Washington University	N.Y.	Mulder, Philip	Va.
Mosley, Everett Cole A.B. 1951, Vanderbilt University	Miss.	Mulford, Roger Elton B.S. 1946, Cornell University	Va.
Mosley, Wilbur Dean	D.C.	Mulholland, John William	D.C.
Mossum, Kenneth Freeman A.B., A.M. 1951, The George Washington University	Va.	Mulkey, Elizabeth Kimbrough	D.C.
Moss, Arnold B.S. 1952, University of Maryland	D.C.	Mulkey, William Alexander	
Moss, Arthur Robert B.S. 1940, College of the City of New York	N.Y.	Mullarney, John Kenneth M.E. 1950, Stevens Institute of Technology	Mass.
Moss, Bernard B.S. 1941, College of the City of New York		Muller, Beatrice Muriel	N.Y.
A.M. 1946, Columbia University		Muller, Frank B.E. 1952, Yale University	Va.
Moss, Robert Cramton	Mass.	Mulligan, James Francis	S.C.
Moss, Robert Harvey	Md.	Mulligan, Robert Michael	Va.
Motley, Myra Anne A.B. 1948, Longwood College	Va.	Mullinas, Joseph Latimer	
Motsinger, Edward Arthur	D.C.	Mullins, Ernest Brown	
Mott, Keith Allen	Kan.	Mullins, Jessie Edith A.B. 1949, The George Washington University	Pa.
Mott, Raymond Levon	Ala.	Mulroy, Helen Marie	D.C.
Mottice, Homer Junior	Ohio	Munalo, Oreste Louis	D.C.
Mould, Lawrence Robert	D.C.	Munan, Louis Pat A.B. 1948, M.S. 1950, The George Washington University	Mass.
Mounjoy, Raymond	D.C.	Munds, Marjorie Ward	D.C.
Moure, Rupert Francis A.B. in Ed. 1941, The George Washington University	Md.	Munger, Richard King	Md.
Moushoulis, George Byron	Va.	Munizaga, Fernando	Mass.
Mox, Lester	D.C.	Munn, Curtis Carl, Jr.	Wash.
Mox, George Poy	D.C.	Munn, Robert Hector	Va.
Mox, James	D.C.	Munro, Sanford Sterling	
Moy, John Gong	D.C.	Munse, Albert Ralph B.S. 1947, M.S. 1949, University of Illinois	Md.
Moyer, Charles Vincent	D.C.	Munson, Harry Randall	Va.
Moyer, Edna C.	D.C.	Munson, Thomas Richard B.S. 1951, The George Washington University	D.C.
Moyer, Leon R. B.S. in Ed. 1949, Pennsylvania State Teachers College	D.C.	Munson, William Bergman	Va.
Moyer, Walter Joseph A.B. 1932, St. Francis College		Muntz, John Allen A.B. 1950, Davis and Elkins College	Hawaii
M.S. 1947, Pennsylvania State College	D.C.	Munves, June Stella	Va.
Moyea, Anna Rehman A.B. 1942, Wilson Teachers College		Murayama, Ann Tsuneko	
Moyse, Walter Gustafson, Jr. B.S. 1946, U.S. Naval Academy	Va.	Murdaugh, John Dandridge A.B. 1953, Virginia Military Institute	Mich.
Mozarch, Martha	Md.	Murdoch, George Davis B.S. 1949, University of Michigan	D.C.
Mizer, George Daniel	N.J.	Muresiano, Dinu Alexandrescu A.B. 1950, M.C.L. 1949, University of Bucharest	Md.
Mione, Mary Emma B.S. in Ed. 1944, Massachusetts State Teachers College, Salem	D.C.	Murnan, Christine Agnes	Tenn.
A.M. 1944, Boston University		Murphey, Jesse Oran A.B. in Govt. 1953, The George Washington University	D.C.
Murphy, Anthony Thomas	Pa.	Murphey, Randolph Clay III	
Muschnick, Abraham Herschel	D.C.		

Murphy, Barbara Fuller A.B. 1946, The George Washington University	D.C.	Myers, Adda Mae B.S. in Ed. 1949, Pennsylvania State Teachers College, Bloomsburg	Pa.
Murphy, Charlene Louise A.B. 1951, Catholic University of America	Md.	Myers, Billie Ray A.M. in Ed. 1950, The George Washington University	D.C.
Murphy, Clara Mary	Mass.	Myers, Barbara Patterson	Md.
Murphy, Harry James, Jr.	D.C.	Myers, Eliza George A.B. 1929, William and Mary College	Va.
Murphy, James Emmet	Va.	Myers, Harold	Va.
Murphy, Jane Elizabeth	Pa.	Myers, Jacob Eugene	Md.
Murphy, Jeanne Eileen	D.C.	Myers, Lester Kenneth	Va.
Murphy, John, Ancona B.S. 1948, Georgetown University	Md.	Myers, M. Thelma	Pa.
Murphy, Lawrence Marshall A.B. 1951, The George Washington University	D.C.	Myers, Margaret Elizabeth	D.C.
Murphy, Margory A.B. 1951, St. Lawrence College	Minn.	Myers, Margaret Mary A.B. 1952, University of Maryland	Md.
Murphy, Mary Louise	Mass.	Myers, Nancy Ruth	D.C.
Murphy, Rosemary Kathleen	D.C.	Myers, Robert Arthur B.S. 1931, William and Mary College	Va.
Murphy, Thomas Frank	Neb.	Myers, Sandra Lee	N.C.
Murphy, Walter Francis, Jr. A.B. 1950, University of Notre Dame	S.C.	Myers, Saul Meredith	D.C.
Murphy, Walter Patrick B.S. 1941, U. S. Naval Academy	Va.	N	
M.S. 1948, California Institute of Technology		Nabil, Yaddollah	Iran
Murphy, William Raymond, Jr. B.S. 1949, University of Akron	Ohio	Nabholz, Martha Dewell	D.C.
Murphy, William Russell A.B. 1948, College of William and Mary	Va.	Nadeau, Nathan James	D.C.
Murray, Edward Patrick A.B. 1926, Marietta College	Md.	Nagel, Eileen	N.Y.
Murray, Helen Holden	Va.	Nagle, Conrad Herbert	Va.
Murray, Imelda Frances B.S.M.E. 1948, University of Maryland	D.C.	Nagler, Norbert	D.C.
Murray, James Clark M.S.M.E. 1952, University of Washington	Md.	Nakamas, Andre Joseph A.B. 1950, A.M. 1952, University of Texas	Mich.
Murray, James Crawford A.B. 1916, Yale University	D.C.	Nail, Edwin Starkey L.L.B. 1951, The George Washington University	Ohio
Murray, Jocelyn Mason B.S. 1949, University of Richmond	D.C.	Najavick, Edward George B.S. 1946, University of Pennsylvania	Pa.
Murray, Joseph Earl	Va.	Najarian, Susie	D.C.
Murray, Raymond Wilkins	Mass.	Nall, Berry Hudson, Jr.	Md.
Murray, Thomas Richard A.B. 1947, University of Oregon	D.C.	Nall, Robert Carl A.B. 1950, Western Kentucky State College	Ky.
Murray, William Clarence A.B. 1947, University of Oregon	Va.	Nally, Robert Vincent A.B. 1950, St. Francis College	Pa.
Murrow, Juanita Smith A.B. in Ed. 1947, The George Washington University	Mass.	Namazi, Joseph B.S. 1949, Punjab Agricultural College	Canada
Murphy, Guilipalli Marasimha B.S. 1942, Tennessee State Teachers College, Johnson City	N.Y.	Namowitz, Stanley Benjamin A.B. 1950, Kings College	Pa.
Musk, Sylvia Kaufman A.B. 1954, Hunter College	Oreg.	Namsw, Morton	Fla.
Musket, James William B.S. 1950, St. Joseph's College	Md.	Nance, John Frank	Tenn.
Mutz, Sterling Boett A.B. 1952, Hunter College	India	Nangle, Gerald Francis A.B. 1948, Ohio State University	Md.
Myer, Ruth Forde A.M. in Gov. 1946, The George Washington University	Tenn.	Nanna, Ernest Hiram, Jr. A.B. 1950, University of Maryland	Md.
		Nason, Roy Joseph	Va.
		Narashin, John Kazuo A.B. 1951, College of St. Thomas	D.C.
		Nash, Andrew John	N.Y.
		Nangares, Amelio Richard	Conn.
		Narten, Perry Foust A.B. 1943, College of Wooster	Va.
		Nash, John Jerome M.S. 1948, Washington University	Md.
		Nash, Ralph Clarke, Jr. A.B. 1951, Princeton University	Pa.
		Nashiwa, Sylvia Akin	Hawaii
		Nassimbene, Raymond B.C.S. 1951, University of Denver	D.C.

Naugle, Joann Belle A.B. 1944, Ohio University	Ohio	Nelson, Daniel Emmet B.S. 1941, University of Utah	DC
Navarrete, Susana	Md.	Nelson, Dennis Denmark A.B. 1952, Fisk University	DC
Naylor, Guy Rodgers, Jr. B.S. 1950, The George Washington University	ME.	Nelson, Doris Lucille Nelson, Dorothy J. M. Nelson, Haywood Bennett Nelson, Herbert H. A.B. 1951, College of the City of New York	DC DC DC DC
Naylor, Robert James	Minn.	Nelson, Kermit Chester Nelson, Merle Ellsworth A.B. 1940, University of Minnesota	Met Me
Neal, Bettye Ann A.B. 1947, University of Iowa	Miss. Pa.	Nelson, Nels Roland B.S. 1938, U.S. Naval Academy M.S. in M.E. 1944, M.S. in Physics 1952, Massachusetts Institute of Technology	NY
Neal, Betty Jo	DC	Nelson, Olivia M. Nelson, Raymond Arthur A.B. 1943, Tusculum College	NY
Neal, Ethel Morter B.S. 1951, Pennsylvania State Teachers College, Shippensburg	DC	Nelson, Richard Harold Nemes, Michael Stephen A.B. in Govt. 1949, The George Washington University	NY
Neal, Mary Belle	Va.	Nesbitt, Betty Rae Ness, Rudolph Walter Nestor, Edwin Muri B.S. 1951, West Virginia University	NY
Neal, Patricia Anne	Ga.	Nestor, Rosale Eleanor Nettles, E. Lucene Thomas Netts, George W. B.S. 1950, U.S. Naval Academy	NY
Neal, Richard Glenn A.B. 1951, University of Maryland	Va.	Neubrand, Georgina May Neudorfer, Lawrence Sterling Neufeld, Fay Neuman, Arthur Ewald B.S. 1950, Memphis State College	NY
Neal, Robert Martin A.B. 1948, A.M. 1949, Emory University	Pa.	Neumann, Richard Keith A.B. 1951, The George Washington University	NY
Neal, Robert Townsley B.S. 1950, University of San Francisco	D.C.	Neville, Edwin Henry Neville, Glenn Everette B.S. 1951, University of Florida	NY
Neal, Roy Lee A.B. 1952, Wilson Teachers College	D.C.	Neville, Tove Esther Nevils, Florence Irene Nevitt, Fred Morton, Jr. Newbegin, Margaret Estella	NY
Neal, William Alfred	D.C.	Newbold, Marianne Meade A.B. 1952, Connecticut College	NY
Nearman, Charles Donald	W.Va.	Newcomb, Laurence C. B.S. 1953, New York State Teachers College, Buffalo A.M. in Ed. 1947, The George Washington University	NY
Nease, Betty Lo A.B. 1949, Marshall College	Utah	Newcomer, Ruth Alma Newel, Betty Jean Newell, Hugh Logan Newhouse, Pev P. Newkirk, LeRoy Newman, Henry Carl B.S. 1949, University of Illinois	NY
Nebeker, Frank Quill Nebeker, Louana V. A.B. 1952, Loretto Heights College	Pa.	Newman, Herbert Manuel Newman, Jack Newman, Jack Henry A.B. 1948, Ohio State University	NY
Nedrow, John Joseph	D.C.	Newman, Lona Bernstein Newman, Margaret Anne Newman, Paul Edward Newquist, Noel Claxton A.B. in Govt. 1949, The George Washington University	NY
Neece, Emily Jane	Md.		NY
Needham, Donald Alonzo A.B. 1929, Clark University	Pa.		NY
Needham, Gerard Joseph B.M.E. 1950, Catholic University of America	N.Y.		NY
Needham, Kathryn Mary B.S. 1950, St. Bonaventure University	Ohio		NY
Needham, Thomas Leo B.S. 1950, College of Steubenville	Ill.		NY
Needham, William Richard B.S. 1950, University of Illinois	S.C.		NY
Needle, Morton A.B. 1952, The Citadel	D.C.		NY
Neel, Edward O'Donnell	D.C.		NY
Neely, James Curtis	D.C.		NY
Neely, John Crosby A.B. 1951, Colgate University	Md.		NY
Neff, Edward Joseph, Jr. B.S. 1950, University of Maryland	Va.		NY
Neff, Paul Francis	W.Va.		NY
Neffen, Mary Louise	D.C.		NY
Negri, John Joseph	N.Y.		NY
Negrine, Elie	D.C.		NY
Negulescu, Paul B.S. 1951, The George Washington University	Calif.		NY
Nedlinger, Mary Nona A.B. 1948, San Diego State College	D.C.		NY
Neidbarger, Patricia Ann	Va.		NY
Neubauer, Walter Draper A.B. 1950, University of Virginia	Va.		NY
Neel, Lulu Louise B.S. 1948, Madison College	Va.		NY
Neelon, John James A.B. 1946, St. Anselm's College	Pa.		NY
Nemo, Peter James B.S. 1952, U.S. Naval Academy M.S. 1953, Harvard University	N.Y.		NY
Neira, Arthur Raymond	D.C.		NY
Nettzey, Mary Regina			NY

Students Registered

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Newton, Alice Gillespie			
B.S. 1939, Michigan State Normal College	Va.	Nogueras, Pedro Belando	N.Y.
Newton, Gordon Quincy	D.C.	Nolan, Mary Margaret	Md.
Newton, Nancy Ann	Va.	Nolan, Raymond Vincent	Va.
No. Acad.		Nolan, Dewey Harrison, Jr.	Va.
Newton, Clinton Andrew, Jr.	Md.	B.S. in C.E. 1951, Virginia Military Institute	
B.S. 1945, U.S. Naval Academy	Calif.	Noland, Lillian Hooks	Va.
Newton, Elizabeth Sutherland		A.B. 1924, The George Washington University	
Newton, Christ Paul	Calif.	Noland, Russell Dee Wayne	D.C.
Niles, Reed Stuart	Mich.	Nomura, James Henry	Md.
B.S. 1952, American University	Va.	Nord, John Miller	N.Y.
Nord, Anne G.		Norfolk, Joan Carol	Va.
B.S. 1947, U.S. Merchant Marine Academy	N.Y.	Norford, Jean Garber	D.C.
A.B. 1949, University of Rochester		Norr, Marjorie Kramm	Va.
LL.B. 1952, New York Law School		B.S. 1947, M.S. 1952, The George Washington University	
Nolan, Margaret Ruth	D.C.	Norrington, Frances Taylor	D.C.
Nichols, Edward Ernest, Jr.	Va.	A.B. 1952, The George Washington University	
M.S. 1950, Louisiana College		Norris, Duane Clayton	Va.
Nichols, Janice Louise	Va.	Norris, Jane Elwolda	Md.
Nichols, Eugene Carewe	D.C.	A.B. 1950, Colorado State College of Education	
Nichols, Joseph Page	Md.	Norris, Lee Glenn	Colo.
Nichols, Margaret Jane	N.I.	A.B. 1948, A.M. 1941, Colorado State College of Education	
Nichols, Mary Ann	D.C.	LL.B. 1948, University of Denver	
Nichols, Neal Clark	Va.	Norris, Paul Marshall	Md.
Nicholson, Dora Pappara	D.C.	B.S. 1946, U.S. Military Academy	
M.D. 1954, University of Athens		Norris, Walter Frausman	Mo.
Nicholson, Francis Bates	S.C.	A.B. 1951, Westminster College	
A.B. 1950, Wolford College		Norris, Willa	Mich.
LL.B. 1952, University of South Carolina		B.S. in Ed. 1934, University of Nebraska	
Nichols, Gene Arthur	Mo.	A.M. in Ed. 1943, Columbia University	
Nichols, Richard O'Leary	Minn.	North, Elmer Ford	Calif.
Nichols, Gordon Kirkland	Md.	A.B. 1952, Stanford University	
Nichols, Robert Henry	N.Y.	Northrup, Barbara Winfred	N.Y.
Nichols, Carsten Milvi	Md.	A.B. 1937, Elmira College	
Nichols, Jessie Patricia	N.Y.	A.M. 1950, The George Washington University	
Nichols, John B.	D.C.	Northrup, Margaret Antoinette	D.C.
Nichols, Lottie	D.C.	Norton, Edward James	D.C.
Nichols, Gertrude Irene	Mich.	A.B. 1948, Columbia University	
A.B. 1952, University of Maryland		Norton, Elizabeth Rosemary	Md.
Nichols, Viola Eleanor		Norton, Emily McMillan	D.C.
Nichols, Otto Carl, Jr.	Mich.	Norton, Hugh Stanton	D.C.
Nichols, Rafael A.	Wis.	A.B. 1947, A.M. 1948, The George Washington University	
Nichols, Marie	Puerto Rico	Norton, Overton Percy	D.C.
Nichols, Franklin Broadie	Wis.	A.B. 1944, University of Michigan	
A.B. 1949, Graceland College	Calif.	Norton, Patricia Virginia	D.C.
Nichols, William		A.B. 1951, Wellesley College	
A.B. 1950, St. Francis College, Pa.	D.C.	Norton, Robert Keel	N.M.
Nichols, Theodore Lyman	Md.	Norton, Virginia Symms	D.C.
A.M. 1941, Yale University	N.Y.	Norton, William L., Jr.	Ga.
Nichols, Arthur Leonard		A.B. 1944, LL.B. 1950, Emory University	
Nichols, Board Gurn	N.Y.	Nottingham, Kenneth Thomson	D.C.
Nichols, E.F.F. 1950, University of Utah	Utah	Not, Joseph George	Pa.
Nichols, Gary Jack		Nowak, Dan	D.C.
Nichols, Ivan A.	D.C.	Nowak, Elaine C.	Va.
Nichols, Ross Christopher	Argentina	Nowick, Sandra	D.C.
Nichols, Howard		Novikova, Lilia	Md.
Nichols, Kentaro	D.C.	Novikova, Nikolai	Md.
A.B. 1950, Waseda University, Japan	Va.	Nowell, Marie Louise	Va.
Nichols, Harlan	Japan	Nowlin, Joe Franklin	Ark.
Nichols, Charles Richard		LL.B. 1944, University of Arkansas	
Nichols, James Glenn, Jr.	D.C.	LL.M. 1950, The George Washington University	
Nichols, Patricia	Idaho	Nowlin, Nora Fay	Tenn.
Nichols, Takashi	Mass.		
A.B. 1951, University of Hawaii	Ind.		
Noel, Rebecca Young	Hawaii		
	N.C.		

Noyes, Anne Sheppard A.B. 1931, The George Washington University	Md.	Odell, Charles A.B. 1932, Western Washington College	Wash. D.C. D.C.
Noyes, Howard Ellis A.B. 1947, University of Tennessee	Md.	Odenwald, John F. Odneal, Mary Louise A.B. in Govt. 1950, The George Washington University	Wash. Md.
Nozicka, Edward Peter A.B. 1947, St. Lawrence University	D.C.	O'Donnell, Alice Louise O'Donnell, Joseph Michael A.B. 1951, The George Washington University	Kans. Va. Denmark
Nubbe, Virgil George A.B. 1943, The George Washington University	D.C.	Oelke, Herman John Oertel, Neason Oestermann, Margot Offenberg, Henry Theodore	Md. D.C. Va. N.Y.
Nune, Alta Frances B.S. 1914, Maryland State Teachers College, Salisbury	Mich.	Offutt, Charles Edward, Jr. O'Flaherty, Patricia Ann	Md.
Nuechterlein, Maured Virginia Null, Patricia Verna	Va.	Ogden, David Pierce B.S. in E.E. 1950, Union College	Md.
Nunemaker, Nancy Anne Nussbaum, Ernest B.C.E. 1953, Cooper Union	Ind.	Ogles, Paul Eugene A.B. 1948, University of Tennessee	Md.
Nussel, Gladys Wineta Nutting, Kelvin Lightfoot B.S. 1939, U. S. Naval Academy	Va.	Oglesby, Robert Dorsey LL.B. 1945, The George Washington University	Calif.
Nuttman, Harold Franklin A.B. 1950, The George Washington University	Kans.	O'Gorman, John Michael B.S. 1941, University of California	N.Y.
Nyce, Peter Quirk, Jr. Nykopp, Erik Albert	D.C. D.C.	M.S. 1943, Ph.D. 1946, California Institute of Technology	D.C.
Nykopp, Fritz Marta Dolores	Finland	O'Grady, Helen Margaret B.S. 1951, New York University	Va.
O		Ogram, Ernest William, Jr. A.B. 1950, American University	
Oakley, Kathleen Wigton Oartel, Ruth Anne B.S. 1950, University of Maryland	Va. Pa.	O'Hare, Robert Emmett A.B. 1953, The George Washington University	Pa. Md. Ohio
Obrataki, John Paul B.S. 1945, U. S. Coast Guard Academy	Pa.	O'Hay, Thomas Patrick Ohlund, Jean Craig	D.C. D.C.
Obear, Margaret Fealy Obear, Mildred Eleanor	D.C. D.C.	Ohralik, Karl Anthony B.S. 1948, Ohio State University	D.C. D.C.
Oberholzer, John David Oberholzer, John William A.B. 1949, Earlham College	D.C. D.C.	Ohlheid, Edward Samuel Okada, Joseph Masamitsu B.S. 1948, Tokyo Imperial University	N.H. D.C. Pa. D.C.
Obermeier, Angela Ann O'Brien, Anthony Aloysius B.M.E. 1950, The George Washington University	D.C. D.C.	Okamoto, Kaname O'Keefe, Irene Anne O'Keefe, Mary Frances Olcaynoyan, Este Ayse Oldershaw, Douglas C. A.B. 1939, University of California, Santa Barbara College	Mass.
O'Brien, Elizabeth Ann A.B. in Ed. 1941, The George Washington University	D.C.	O'Leary, Francis A. A.B. 1953, Wagner College	R.I.
O'Brien, Harry Martin O'Brien, James David B.S. in F.S. 1952, Georgetown University	Mass. Md.	O'Leary, Robert Waterman B.F.A. 1951, Rhode Island School of Design	D.C. Ill. Va. D.C.
O'Brien, James Dennis O'Brien, Jane Maliseed O'Brien, Jean Marie O'Brien, John Francis O'Brien, Marilyn Patricia O'Brien, Robert John A.B. 1951, The George Washington University	Pa. Ohio Mass. D.C. Va.	Olin, Wilber C. Oliva, Sylvia Christina Oliver, Edward Eugene Oliver, Richard Lewis B.S. 1951, University of Illinois Oliver, Richard Perry B.S. in F.S. 1949, Georgetown University	Md. D.C. Va. D.C.
O'Brien, Vincent Robert Odoms, Phyllis Alice O'Connell, Patricia O'Connell, Thomas Francis O'Connor, James Francis, Jr. A.B. 1949, Columbia University	Va. Mich. Md. Conn. N.Y.	Olmstead, Donald Lee Olmstead, William Harris, Jr. Olmstead, George Leavitt Olsen, William Robert B.S. 1949, Georgetown University	D.C. Md.
O'Connor, James Joseph O'Connor, Michael Callaghan B.S. 1951, U. S. Naval Academy	Md. La.	Olin, John Seymour Olson, Boyd Ellertson B.S. 1941, Brigham Young University M.B.A. 1951, Harvard University	
O'Connor, Robert Francis Odarchenko, Alexander	D.C. D.C.		

Students Registered

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Olson, Charles Edward A.B. 1940, Carleton College A.M. 1951, Stanford University	Minn.	Osbourne, Alan A.B. 1919, Pomona College B.S. 1921, Massachusetts Institute of Technology	Md
Olson, Darwin Leander B.S. 1941, North Dakota Agricultural College	N.D.	Osborn, Karl Rose Oshoff, Seymour David Ostara, Seiki	Wash. D.C. Hawaii
Olson, Harold Elling Olson, Mabel LaVonne Olson, Ruth Louise Olson, Ray Andrew	Va. N.D. N.M.	Ostbrink, Ivan Bernard Oster, Frederic Bruce, Jr. Ostland, Ruth Caroline	Md Va Va
Oltmans, Bernard Anthony Oltmans, Francis John Oltmans, Gabriel Charles L.L.B. 1949, University of Geneva, Switzerland	Calif. Md D.C. D.C.	Osman, Vera Hertha Lang Ost, Dr. Inc. 1947, University of Vienna Osmon, Richard Barr Oss, Anna Delores	D.C. Fla Pa Md
Oliver, Edward Patrick A.B. 1940, Baylor University M.S. 1948, University of Tennessee	Pa.	Ostmann, Eleanor Bernadette Ostlich, Ralph A.B. 1950, A.M. 1951, The George Washington University	D.C. D.C.
O'Mara, James Herbert O'Neil, Joe O'Neil, Hugh Vincent	Va. D.C. D.C.	Ostrowski, Stella Mary A.B. 1952, University of Vermont	Vt.
O'Neil, Jeanne Marie O'Neil, Katherine Hutchinson O'Neil, Nancy Katherine A.B. 1941, Dartmouth College	D.C. D.C. D.C. D.C.	Ostrve, Barbara Miller O'Sullivan, David Dees O'Sullivan, John Maurice	D.C. Md Mass
O'Neil, Salvador Delgado Ong, Beale Hilda Ong, Harry Alfred, Jr. A.B. 1950, The George Washington University	Puerto Rico Md D.C.	Oswald, Elizabeth Janet B.S. 1957, University of Maryland M.S. 1947, The George Washington University	Va
O'Neil, Jaroslav George A.B. 1940, Columbia University Ondrak, John Joseph B.C.E. 1953, The George Washington University	D.C. D.C.	Otero, Alicia Carol Otero, Antonio A.B. 1941, University of Puerto Rico	D.C. Puerto Rico Puerto Rico
O'Neil, Jerry Howard O'Neil, Maria A.B. 1952, Wellesley College	D.C. D.C.	Otero, Carlos Enrique Otero, Vilmartha Lora Raul Ota, Harry Kazuo	D.C. Puerto Rico D.C.
O'Neil, Martin Elizabeth O'Neil, Robert Carlson O'Neil, Barbara Lee B.S. 1941, North Dakota State College	D.C. N.D. D.C.	Ott, Robert Lee Ott, Walter M. A.B. 1951, Pennsylvania State College	Calif. D.C.
O'Neil, Beatrice Eunan O'Neil, Paul P. B.S. 1952, University of Illinois O'Neil, Remedios Solis	Md. Ill.	Otte, Ida Ruth Otte, Lorraine Tekla Ottens, Ronald Ottenger, Ruben Herschel	D.C. Md D.C. D.C.
O'Neil, Milton L.L.B. 1952, University of Wisconsin Ondrak, Dorothy Ellen A.B. 1950, The George Washington University	D.C. D.C. Va	Otto, Clarence Edmund Otto, Ingrid Helga Edith A.B. 1941, University of Cincinnati A.M. in Govt. 1950, The George Washington University	Mch. Mo.
O'Rourke, Franklin Sewall A.B. 1950, Lafayette College O'Rourke, Lawrence Edward B.S. 1951, Holy Cross College	N.J. Md	Otto, William John Ovrevik, Glenn Sydney B.S. 1951, University of Maryland	Va. D.C.
O'Rourke, Walter Paul O'Rourke, William Desmond O'Rourke, Robert O'Rourke, Augustine Jr.	N.J. D.C. D.C. D.C.	Owen, Dorothy Mae Owen, Edward Wright Owen, Franklin Duane Owen, Henry David	Ark Va N.Y. D.C.
O'Rourke, Francisco G. O'Brien, Margaret Louise O'Brien, Robert Ambrose, Jr. A.B. 1944, Southern Methodist University	N.Y. D.C. Pa. D.C.	Owens, Jack Owens, Jacqueline Shirley Owens, James Robert Ownby, Joyce Elizabeth B.S. 1953, The George Washington University	W.Va Va N.Y. D.C.
O'Brien, Dorothy Arnold A.B. 1944, Southern Methodist University Osborne, Glen Freelon, Jr. A.B. 1953, Rollins College	Pa. D.C. Va. Md. Fla.	Owley, Alice McGehee A.B. 1951, University of Alabama Oxenham, James Price Oyama, Jiro B.S. 1949, Northwestern University Oyama, Vane Iwao B.S. 1951, The George Washington University	Ala. Md Md Md. Va.
		Oyster, Mamie Hunter	

Ozuz, Herbert
A.B. 1949, New York University
A.M. 1951, Temple University

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Paabo, Maya
Paaswell, Robert Emil
Pace, Ethel Watts
Packard, Duane Leslie
A.B. 1950, Minnesota State Teachers College
Packer, Harry Brown
Packer, Ralph John
Packard, Roberta Jeannine
A.B. 1950, University of Maine
Padgett, Evelyn Jeanette
Padilla, Manuel T.
Padilla, Robert Augusto
Padilla, Sandra H.
Padovan, Edna L.
A.B. 1949, Iowa State Teachers College
Padrick, Jack Omega
A.B. 1952, Washington State College
Pake, Anne Ruffin
Pake, Eloise Randolph
Pake, Virginia
Painter, Ethan Allen
Painter, Kenneth John
Painter, Richard Elmer
B.S. 1951, University of Maryland
Paoles, Mary Ann
Pakis, Gloria Alexander
Paladinos, Peter Harry
Paley, David R.
A.B. 1949, L.L.B. 1951, New York University
Pallada, Anna Maria
Palmer, William Harry
Palmarini, Daniel Robert
Palmer, Barber Clayton, Jr.
A.B. 1950, Dartmouth College
Palmer, Grant Alexander
B.S. 1941, U.S. Naval Academy
Palmer, John Gilbert
A.B. in Ed. 1950, M.S. 1951, The George Washington University
Palmer, Joseph Henry, Jr.
Palmer, Patricia Taylor
Palmer, Ralph Basil, Jr.
Palmer, Robert Norman
Palmer, Jorge Alejandro
Pamell, Herbert George
Pamphila, Virginia Ann
Pam, Lan
B.S. 1950, Davidson College
Panagos, Gus
Panamera, Clifton Italo
Pang, Margaret Fong
Pannett, Jules Robert
Pantrek, Violet Barbara
B.S. 1950, Aquinas College
Pantola, Frank Ralph
Pantola, Joseph
Pan, Wen-Nien
A.B. 1951, University of Nanking
Papadopoulos, Nicholas M.
B.S. 1951, American University
M.S. 1951, The George Washington University
Papara, Dora
M.D. 1911, University of Athens
Papara, Stathis Ethel

Md.
Paparella, Jerry Joseph
Pappas, Stephen Stavros
B.S. 1952, The George Washington University
Paramakas, Nathalie
A.M. 1942, University of Vilnius, Lithuania
Papaskevna, John Emanuel
Parden, Arthur Ellsworth, Jr.
B.S. in F.S. 1949, Georgetown University
Paris, Henry Breckinridge, Jr.
Parish, Robert Milton
B.S. 1952, Boston College
Park, Donald Stuart
A.B. 1946, Tufts College
Park, Elizabeth Ray
Park, Heash John
Park, Helen Dorothy
B.S. 1946, M.S. 1949, The George Washington University
Park, Kenneth Lothrop
Park, Robert Eugene
B.S. 1952, University of Florida
Parker, Blanche Lillian
Parker, Carlene Louise
Parker, Cynthia Lu
Parker, George Kenneth
A.B. 1949, Bowling Green State University
M.B.A. 1953, The George Washington University
Parker, Harold Curtis
Parker, Harry Ambrose Vincent
Parker, James Lewis
Parker, James Walker, Jr.
Parker, Katherine
A.B. 1926, Daniel Baker College
A.M. 1948, East Texas State Teachers College
Parker, Lois Proctor
A.B. 1949, Washington College
Parker, Norman Elbert
Parker, R. Elmo
Parker, Ralph William
Parker, Richard Caldwell
Parker, Richard Dale
B.S. 1951, The George Washington University
Parker, Ruth Taylor
Parker, Sarah Jean
Parkes, James Lloyd
A.B. 1949, The George Washington University
Parkhurst, Kenneth Langroise
A.B. 1950, Amherst College
Parkinson, Roger West
B.S. 1951, Brigham Young University
Parkman, Katherine R.
Parks, Albert Benning
A.B. 1941, The George Washington University
Parks, Finley James, Jr.
Parks, Harriett Anne
Parks, Kendrick Wellman
Parks, Neil Ronald
Parneter, Benjamin David
Parnot, Simplicio Cuyano, Jr.
A.B. 1951, The George Washington University
Parr, Wilma Faith

Pa.
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Students Registered

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Parra, Alirio Antonio A.B. 1948, A.M. 1952, Cambridge University	Venezuela	Pauly, Charles Hicken B.S. 1952, Georgia Technological Institute	D.C.
Parish, Evelyn May A.B. 1945, The George Washington University	Md.	Pauly, John Frederick Paurowski, Carl Joseph B.Chem. 1918, Cornell University	Mo. N.Y.
Parry, James Davidson A.B. 1950, The George Washington University	D.C.	Pavlick, S. Mary B.S. 1949, A.M. 1950, Columbia University	Pa.
Parry, Winne David	Wis.	Pavliides, Maria	D.C.
Parsons, John Allen	Va.	Payne, Carroll James	Va.
Parsons, John Frederick	Md.	Payne, Claude Alvin	D.C.
Parsons, Lois Marie	Ill.	Payne, Emily Jeanne B.S. 1951, Wilson Teachers College	D.C.
Parsons, Mabel Ellen A.B. 1947, Scripps College for Christian Workers	D.C.	Payne, George William	Va.
Parsons, Tahmineh Irani	D.C.	Payne, John Wesley	D.C.
Parsonson, Allen Venables	Md.	Payne, Lawrence Dewitt	Va.
Partridge, Dora Lee B.S. 1949, University of Georgia	D.C.	Payne, Leonard Hushon, Jr.	Md.
Parsamnick, Leonard Daniel B.S. 1951, The George Washington University	N.Y.	Payne, Stanley Roscoe	N.C.
Pasoul, Norman Edward B.S. 1940, University of Pittsburgh	Md.	Paz, Fay Iris	D.C.
Pasin, Smetel Refik LL.M. 1917, University of Istanbul	Turkey	Peabody, Alan	D.C.
Pasko, Joseph Edward	Pa.	Peacock, Harold A.B. 1941, Columbia University	Va.
Pasquale, Ernest Leonard	D.C.	Peacock, Jack Travis	D.C.
Pasternak, Frances Ellis A.B. 1950, The George Washington University	D.C.	Peacock, James Tomlinson	Calif.
Patch, Dorothy Elizabeth	D.C.	Peake, Evelyn Chloe	D.C.
Patchan, Michael	Va.	Peake, Evelyn Margaret	D.C.
Patchan, Steve	Pa.	Peake, James Edward	Md.
Patsaude, Edmund Thomas B.S. in E.E. 1948, Rensselaer Polytechnic Institute	Va.	Pear, Rosanne	Mass.
Paton, Robert Arthur B.S. 1954, U.S. Naval Academy	Mass.	Pearce, Donald Bruce A.B. 1938, Brown University	Md.
Peacock, John Franklin	Va.	Pearce, Emory Alfred	D.C.
Patel, Emil Peter	N.Y.	Pearce, Ira Hersey A.B. 1951, The George Washington University	D.C.
Patterson, Albert Edward B.S. in Ed. 1948, Alabama Polytechnic Institute	Va. D.C.	Pearson, Arthur Stanley A.B. 1947, Columbia University	D.C.
Patterson, Diane Lester A.B. 1950, Denison University	Ohio	Pearson, Harry Newsome B.S. 1948, Mississippi State College	Ga.
Patterson, Frances Smith A.B. 1945, College of William and Mary	Nebr.	Pearson, John Martin	Va.
Patterson, Frances Telleston	D.C.	Pearson, Theodore Bachly	Ky.
Patterson, Joseph Clarence, Jr.	Va.	Pearson, Twila Jean	D.C.
Patterson, Joseph William	Va.	Pearse, Patricia Dorothy B.S. 1947, University of Cincinnati	Nev.
Patterson, Linda Russell A.B. 1951, University of Kentucky	D.C.	Peck, Larry Jacob	Iowa
Patterson, Hubert Allen, Jr. B.S. 1950, Midwestern State College	D.C.	Peckham, Marie A. B.S. 1950, University of Pennsylvania	Pa.
Patterson, Arthur Gordon A.B. 1946, Yale University	Md.	Pecora, Eugene D. B.S. 1951, Georgetown University	Pa.
Paul, Eugene Bernard A.B. 1949, LL.B. 1951, The George Washington University	Va.	Pecot, Rebecca Koonce A.B. 1951, The George Washington University	D.C.
Paul, Robert Holmer	Va.	Pedersen, Frank Alfred	D.C.
Paulsen, Sam Jordan	D.C.	Perry, Donald Porter B.S. 1948, Virginia Polytechnic Institute	Va.
Paulsen, David	Idaho	B.C.L. 1952, College of William and Mary	
Paul, Joan Margaret A.B. 1951, University of Utah	Va.	Pegan, John Robert B.S. 1949, Washington University	Md.
Pauls, Michael George	D.C.	Pedler, William Houston	Pa.
		Pekin, Aaron Jay	D.C.
		Permann, Esther Elizabeth	S.D.
		Peisner, Arthur A. LL.B. 1950, The George Washington University	Md.
		Pelikan, Helen Leese	Va.
		Pelkev, Mary Suzanne	Vt.
		Pell, Allan Briggs	N.C.
		Pell, Arthur Jack B.S. 1952, The George Washington University	D.C.

Pell, Helen M.	Ill.	Peter, Paul F.	Va.
Peltier, Eugene Joseph	Kans.	B.S. 1928, Syracuse University	Va.
B.S. in C.E. 1911, Kansas State College		Peter, Suzanne Reynolds	W.Va.
Pemberton, Crayton Henry	D.C.	A.B. 1952, Hollins College	
Pemberton, William Charles	Md.	Peters, Alonzo Dailey	Ar.
Pendarvis, Robert Thomas	S.C.	A.B. 1949, Shepherd College	D.C.
Pendelast, Anna Paulina	D.C.	Peters, Audrey Ann	D.C.
Pendelast, Joseph Patrick	W.Va.	Peters, Carol Ann	Wash.
Pendelast, Betty Sue	D.C.	Peters, Dorothy Ellen	
Pendleton, Catherine Ann	D.C.	Peters, John Bevier	Pa.
Pendleton, Ralph Gary	D.C.	B.S. 1950, University of Oregon	
Pennedy, Louis Albert	D.C.	Peters, Joseph Allen, Jr.	
Pennman, Hugh Saxon	D.C.	A.B. 1947, Pennsylvania State College	Va.
A.B. 1951, University of California		A.M. 1950, University of Pennsylvania	
Penn, John Edward	D.C.	Peters, Martha Lillian	
A.B. 1951, University of Maryland		A.B. 1931, Randolph-Macon Woman's	D.C.
Pennney, Barbara Eugenia	D.C.	College	
Pennington, Robert Miles	Md.	Peters, Raymond Joseph	Md.
B.S. 1950, M.S. 1951, Michigan State		Ph.B. 1942, St. Michael's College	
College		Peters, S. Richard	
Penrod, Marian Carole	Pa.	A.B. 1949, Ohio Wesleyan College	D.C.
Peutecott, Augusta Martin	Ala.	A.M. 1951, Harvard University	D.C.
A.B. 1948, University of Alabama		Petersen, Lillian Jeannette	Mich.
Pentecost, Richard Livingston	Va.	Petersen, Marilyn Marjorie	
A.B. 1951, The George Washington		Petersen, Boyd David	Ill.
University		B.S. 1952, Michigan State College	Conn.
Pepe, Ralph James	N.J.	Peterson, Charles Clinton	Ill.
B.S. 1951, Adelphi College		Peterson, Charles Hoffrid	Md.
Peppard, Matthew James	Fla.	Peterson, Charles Raymond	
A.B. 1951, Harvard University		Peterson, Dorothy C.	D.C.
Perez, Alfonso Posada	Colombia	A.B. 1928, University of Minnesota	
Perez, Louis Vincent	Md.	Peterson, Douglas Harold	Minn.
Perez, Ramon Manuel	Puerto Rico	A.B. 1952, Ohio State University	
B.S. 1941, U.S. Naval Academy		Peterson, Glen Douglas	Kans.
Penham, Jane Frances	Va.	A.B. 1952, University of Minnesota	
Perrin, James Stephen	Va.	Peterson, John Malcolm	
A.B. 1937, Wake Forest College		B.S. 1942, A.M. 1947, University of	Va.
Perkins, Emile Elmer	N.Y.	Kansas	
Perkins, Cecil Rapp	W.Va.	Peterson, Milton Maurice	
Perkins, Judith Lorraine	N.Y.	B.S. 1940, Central Michigan College	
Perlin, Elliott	D.C.	of Education	Conn.
Perlman, Marvin Morton	D.C.	M.S. 1942, University of Michigan	
Pernet, Alain William Georges	France	Peterson, Walbur Daniel	D.C.
Perronne, Donald Charles	N.Y.	A.B. 1952, Ohio Wesleyan University	D.C.
Perrons, Matthew Phillip	D.C.	Pethlansky, Eleanor	
Perrone, Joseph Logan	Texas	Peto, John	
A.B. 1942, Stephen F. Austin State		B.S. 1947, College of the City of	
College		New York	
Perrone, Jeanne d'Arc May	D.C.	LL.B. 1952, The George Washington	D.C.
Perritt, Thomas Andrew	Va.	University	D.C.
Perron, James Stephen	D.C.	Petri, Ann Emmons	Va.
A.B. 1937, Wake Forest College		Petrie, Eva Rebecca	
Perry, John Robert	D.C.	Pettet, Sofia Pauline	Va.
Perry, Rufus George	N.Y.	A.B. 1948, University of North Carolina	Va.
Perry, Stanley Duward	Okla.	Pettigrew, Edith	D.C.
Perry, Vernon Paul	Md.	Pettigrew, George Matthew	D.C.
Perry, William Dial	D.C.	Pettigrew, Hugh McClelland	
A.B. 1951, Princeton University		Pettigrew, Jamie Lucille	
Perschuck, Helen Mae	D.C.	A.B. in Ed. 1947, A.M. in Ed. 1951,	Md.
Person, Vernon James	Md.	The George Washington University	D.C.
A.B. in Govt. 1950, The George		Pettit, Charles Albert	
Washington University		Pettus, Francis Cornelison	
Perruzzo, John	Va.	A.B. 1930, University of Hawaii	
Peszel, Margaret	Pa.	A.B. in Govt. 1951, A.M. in Govt. 1953,	D.C.
Peseli, Branko Martin	D.C.	The George Washington University	Wash.
LL.B. 1931, LL.D. 1932, University of		Peucker, Ralf Georg	Ky.
Zagreb, Yugoslavia		Peyton, David Wakefield	
Ph.D. 1950, Georgetown University		A.B. 1940, Whitman College	
Peshind, Sarah Ruth	Ill.	Pfahler, Robert Duval	Va.
A.B. 1950, The George Washington		B.S. in M.E. 1918, The George	
University		Washington University	
Petcavich, Joseph Francis	Pa.	Pfeiffer, Shirley Marguerite	

Students Registered

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Pfeiffer, Walter Alfred B.S.E. 1950, University of Connecticut	D.C.	Piggot, Anne Marguerite Pissaludas, Euphides	D.C. Va.
Pfeiffer, Hans Georg	D.C.	Pileggi, Joseph	D.C.
Pfeiffer, James Henry	D.C.	Pillote, Jose Celestino	D.C.
Pfeiffer, Carl Herman A.B. 1948, The George Washington University	Fla.	Pillote, Robert Lawrence A.B. 1952, Gettysburg College	D.C.
Pfeiffer, Frances Ruth	Fla.	Pinson, Benjamin Franklin	D.C.
Pfeiffer, Charles Scott B.S. in E.E. 1949, Pennsylvania State College	Va.	Pinch, Anita Porto A.B. 1952, The George Washington University	N.Y.
Phelan, Patricia Knox	Va.	Pinch, Edward Thomas A.B. 1951, The George Washington University	Fla.
Phelan, Patrick John	Ariz.	Pineus, Arthur A.B. in Govt. 1948, The George Washington University	Md.
Phelps, Harold Lloyd	Va.	Pineus, William A.B. 1941, Brooklyn College	Md.
Phelps, Helen Irene A.B. 1938, College of William and Mary	Md.	A.M. 1948, American University	Md.
Phillips, Phyllis Jane	D.C.	Pineau, Roger A.B. 1942, University of Michigan	Md.
Phillips, Arcadia Dowdell	Colo.	Pinette, Mattie Anna B.S. 1952, American University	D.C.
Phillips, Charles Thomas	Texas	Pinetore, Nelson Vincent A.B. 1949, Canisius College	Md.
Phillips, Donald Everett	D.C.	Pinson, Jack Andrew B.S. in B.A. 1948, University of Nebraska	Md.
Phillips, Edith Sewall A.B. in L.S. 1952, The George Washington University	Va.	Pinkham, Richard Collins B.S. in Ch.E. 1948, Northeastern University	Md.
Phillips, Gloria Lieber	Idaho	Pino, Edward Charles A.B. 1950, Michigan State College	Mich.
Phillips, Jack Lyle A.B. 1950, Idaho State College	D.C.	Pinson, Anna H.	D.C.
Phillips, Jacqueline Nalley	Md.	Pinson, David Christian B.S. 1952, Florida State University	Md.
Phillips, Joseph Harry, Jr.	D.C.	Piper, Jürgen Francis	Md.
Phillips, Josie Lee B.M. 1950, Southwestern College	Iowa	Pirri, Vincent P. B.S. in Ch. 1949, B.C.L. 1952, College of William and Mary	N.Y.
Phillips, Leonard Bradwell A.B. 1951, Yale University	Fla.	Pisani, Shirley Feldman	Md.
Phillips, Marion White B.S. 1952, University of Florida	Tenn.	Pismotti, Eugene T.	Va.
Phillips, Richard Ross	Ala.	Pistone, Joseph Vincent	D.C.
Phillips, Robert Dean B.S. 1952, Howard College	Va.	Pitchford, Leslie L., Jr. A.B. 1948, Roanoke College	Va.
Phillips, Rufus Colfax III A.B. 1951, Yale University	Ga.	A.M. in Govt. 1950, The George Washington University	
Phillips, Thomas Madison B.F.E. 1952, Georgia Institute of Technology	Va.	Pitkin, Louisa Elizabeth	D.C.
Picariello, Harry John	D.C.	Pitsenberger, Wilma	W.Va.
Picardo, Mario Ventura	D.C.	Pittard, Philip Murray	Va.
Pick, Delia B.S. 1948, U.S. Merchant Marine Academy	D.C.	Pittman, Mary Thomas A.B. 1945, Duke University	N.C.
Pickard, Arnold David A.B. 1951, Cornell University	Tenn.	Pitts, Denver Collyn A.B. in Govt. 1952, The George Washington University	Ohio
Pickard, Claire Dorothea	Va.	Pitta, Vaden S. LL.B. 1952, LL.M. 1953, National University	Md.
Pickard, Clarence Fandward B.S. 1950, Massachusetts Institute of Technology	D.C.	Piver, Morris Steve	D.C.
Pickard, Robert Hilton	Va.	Pirley, John Sherman	Va.
Pickens, George Wilson	D.C.	Pizer, Robert Simon	D.C.
Pickett, Jack Milton A.B. in Govt. 1950, The George Washington University	Va.	Pizola, Anthony Conrad	D.C.
Pieton, Carol Landis	Md.	Plaag, Hugo William, Jr.	D.C.
Pielmeier, George Robert A.B. 1952, The George Washington University	D.C.	Plaza, Paul	Md.
Pierce, John Roderick B.S. 1945, University of Minnesota	Nev.	Plaine, Leonard Irwin A.B. 1951, Harvard University	N.Y.
Pierce, Stanley William B.S. 1953, University of Utah	D.C.	Plank, William Holt	D.C.
Pierdon, Fred Arthur	D.C.	Plante, Norman Anthony A.B. 1950, University of New Hampshire	N.H.
Pierdon, Margaret Jean	D.C.	Plasse, Maurice B. A.B. 1949, University of Maryland	D.C.
Pierpoint, Mary Ellen	Va.		
Pierpoint, Thomas Joseph			

Plaster, Henry Garrett B.S. 1950, Duke University	D.C.	Popper, Robert David	D.C.
Plazan, Julia	Colombia	Porter, Albert Hamilton	Mass
Pledger, Phyllis Margaret A.B. 1951, Connecticut College	Md.	Porter, A.B. 1944, Dartmouth College	D.C.
Pletcher, Ralph Weldon B.S. 1948, University of Maryland	Va.	LL.B. 1947, Harvard College	Kr.
Plevin, Leon Marvin A.B. 1953, West Virginia University	W.Va.	Porter, Jack Bennett A.B. 1940, Gonzaga University	Pr.
Plumb, Rosemary Dengler A.B. 1944, University of Rochester	Md.	Porter, James Albert B.S. 1951, Yale University	Va.
A.M. in Govt. 1948, The George Washington University		Porter, James Brown	Va.
Plyer, Betty Lou Robinson A.B. 1951, The George Washington University	Md.	Porter, John Musante	Md.
Plyer, Charles Herbert, Jr. B.M.E. 1952, The George Washington University	D.C.	Porter, Mary Jacqueline A.B. 1949, Mary Washington College	Pa.
Poage, Jack Pat B.S. in F.S. 1949, West Virginia University	W.Va.	Porter, Milda Mae	Conn.
Poh, Martin C. A.B. 1942, B.D. 1946, D.C. 1949, Concordia Theological Seminary	Wash.	Porter, Than Robinson	
Poe, Warren Clayton	Md.	Porter, Thomas Craig	Va.
Poincville, Felice Eve	D.C.	Porter, William Matthews A.B. 1950, University of Connecticut	Va.
Poland, Florence Walton B.S. 1951, Limestone College	Va.	Porterfield, Marguerite K.	Va.
Polansky, Bernard Paul	Pa.	Porterfield, Robert James	D.C.
Polivak, Stephen	Md.	Porterfield, Robert James II	Mich.
Potetti, Peter John B.S. in Aero. Eng. 1950, Massachusetts Institute of Technology	N.Y.	Porton, Fredric Carl	Md.
Polits, Eugene B.S. in B.A. 1951, Georgetown University	D.C.	Portwine, Ralph Samuel	
Poll, George	D.C.	Posada, Antonio J. Agr. Eng. 1944, Facultad Nal. de Agronomía Universidad Nacional de Colombia	Colombia
Pollard, Robert Van Buren A.B. 1948, Emory University	Miss.	M.S. 1948, Ph.D. 1952, University of Wisconsin	D.C.
LL.B. 1950, Harvard University		Posada, Mario	Va.
Pollakoff, Sheldon Erwin		Posaner, Heinz	
Polley, Robert Eugene A.B. 1951, Cornell University	Md.	Posay, Elizabeth Stewart B.S. 1955, Southwest Missouri Teachers College	Thailand
Pollon, Anne Sako	D.C.	Posin, Benjamin William	D.C.
Pollack, Clarence Foster, Jr. B.S. 1946, U.S. Naval Academy	D.C.	Poskus, Joseph John	Pa.
Pollack, Diane L. A.B. 1951, University of Arizona	D.C.	Posnansky, Rosalie Lucille	D.C.
Pomeroy, Delphine Patricia	Va.	Posner, Israel	Md.
Pommer, Robert William B.S. 1950, U.S. Merchant Marine Academy	Md.	Posta, John Joseph	Tenn.
Pomponio, Paul Peter	Va.	Postal, Evelyn Michael	Md.
Pomponio, Peter Paul	Va.	Potter, Betty Ann	
Ponack, Betty	D.C.	Potter, Margaret Jane	
Pond, Hartley Linwood B.S. 1942, University of Michigan	Maine	Potter, Thomas Kelly, Jr.	
M.S. 1948, The George Washington University		Potter, Thomas Van A.B. 1951, University of North Carolina	Va.
Pond, Peggy Pierce	D.C.	Potter, William Dayton	Va.
Ponzoni, Mildred Elaine	Pa.	Potts, Elaine Gwennette	Mass.
Pool, Alice R. A.M. 1949, Columbia University	N.J.	Potts, Edwin Hammond A.B. 1951, University of Mississippi	Va.
Poole, Anne Procken A.B. 1951, Mary Baldwin College	N.C.	A.M. 1959, Colorado State College of Education, Greeley	Va.
Posley, Douglas Arthur	Va.	Potts, Paul Russell	Md.
Pope, Fannie Fairchild	Md.	Poulos, Helen Joanne	Iowa
Pope, James Sterling	N.Y.	Pounder, Isabelle Connee	
Pope, Mary Venables	Honduras	Poupore, Lincoln A.	
Popovitch, Marion A.B. 1951, University of California		Pough, Loren Boyd LL.B. 1938, National University	D.C.
		Powell, Kathryn Hedding	Pa.
		Powers, Noreen Ann	Mass.
		Prach, John Stanley	N.Y.
		Prada, Edward	Wash.
		Pratt, Charles G. B.S. in C.E. 1955, Oregon State College	
		Pratt, Curtis Robert A.B. 1950, The George Washington University	Ill.
		Prehn, Elmer Patton A.B. 1946, Cornell University	Md.

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[illegible]

Qureshi, Bushra
A.B. 1949, Kinnard College for
Women, Pakistan
A.M. 1951, Islamia College, Karachi
Institution

R

Rabin, Joseph Edward
A.B. in Govt. 1941, The George
Washington University
Racca, Carmine William
Racey, James Mullar
B.S. 1948, Lynchburg College
Rachin, Jack
B.S. 1951, College of the City of
New York
Rachos, Irving Melvin
A.B. 1951, West Liberty State College
Radcliff, Patricia Ann
A.B. 1951, Georgia State College for
Women
Radcliffe, Elizabeth
Radel, Frederick Malcolm
B.S. 1952, United States Military
Academy
Radko, Joseph
A.B. 1950, Wilkes College
Radman, Melvin D.
Radenovic, Mary Ann Esther
Radt, Alfred Conrad
B.S. in Ch.E. 1951, University of
Massachusetts
Rafferty, Raymond Benedict
Raffner, Martin
A.B. 1951, New York University
Ragan, Richard John
A.B. 1951, Ohio University
Ragotzke, Wynette Mary Adams
A.B. in Ed. 1946, The George
Washington University
Rahboun, Charles Nathaniel
Raja, Cerny
Rajski, Carmen Arroyo
Rahgh, Maurice Francis
A.B. 1951, St. Anselm's College
Rales, Anna Loretta
Rales, Ellen Teresa
Rames, Bruce Michael
Ramey, John Lyndon
Ramey, John Wyatt
Ramey, Robert Lee
Ramos, James Mariano
Ramoser, Kenneth Aubrey
Ramsay, Richard Fay
Ramos, Fatshe Ellen
Rasative, Kanta Ramchandra
A.M. 1947, School of Economics and
Sociology, University of Bombay,
India
Rand, Vernon Elmer
Rand, Victor Charles
Randall, John Deshon
Randall, Robert Henry, Jr.
B.C.E. 1941, The George Washington
University
Randall, Ruff Hochheimer
A.B. 1951, Southampton College
Randall, William Arthur, Jr.
Randolph, Jennings, Jr.
Randolph, Richard Eugene
B.S. 1949, Michigan College of
Mining and Technology

D.C.
Rankin, Joseph Jeffrey
A.B. 1948, University of Pittsburgh
Rankin, William Walker
Ranschoff, Jackson Arthur
B.S. in Ch.E. 1950, Lehigh University
M.S. in Ch.E. 1951, Georgia
Technological Institute
Ranta, Mary Hayden
Rapavi, Andrew
B.S. 1952, New York State College of
Forestry
Rapp, Eleanor Elizabeth
Rappert, Herbert Roy
Rapport, Leonard Arnold
A.B. 1951, University of North
Carolina
Rarig, Lloyd Corneal
A.B. 1950, University of Alabama
Rosenberger, Raymond Joseph
A.B. 1949, Dartmouth College
Rash, Norman Eldridge
A.B. 1950, College of William and
Mary
Rasmussen, Frank Joseph
B.S. in M.E. 1950, University of
Illinois
Raspet, Rudolph
Rast, Robert
A.B. 1950, University of Texas
Rathbone, Helen Collin
Rathbone, Walter Cox
A.B. 1951, Georgetown University
Rathbun, Edward Alan
Ratowsky, Max
Ratti, Ricardo Allen
B.S. 1954, U.S. Coast Guard Academy
Raven, Virginia Laurence
Ravin, Jean
A.B. 1956, College of the City of
New York
A.M. 1941, New York University
Rawlings, Gower Leonard
Rawlings, Peggy Matilda
Ray, Donald Pike
A.B. 1941, University of Colorado
A.M. 1947, The George Washington
University
Rayl, Leonard Louis
Raymond, Barbara June
B.S. 1952, The George Washington
University
Raymond, Mark Bradford
B.S. 1951, University of Maryland
Raymond, Robert Jibrail
B.S. 1953, University of Scranton
Reachmack, Nicholas John
Read, Donald Everett
B.S. in M.E. 1950, M.B.A. 1953,
Cornell University
Ready, Eleanor Margaret
Reagan, Ann Louise
Reagan, Thelma Jean
Reardon, Daniel Joseph
B.S. 1950, College of the Holy Cross
M.S. 1950, New York State College
Rebal, Margaret Ann
A.B. 1951, University of New Mexico
Reber, Earl Edward
Rector, Alfred Rosier
L.L.B. 1952, American University
Reid, Sarah
Redding, Lester Allen

Va

D.C.
Cana

D.C.

N.Y.

D.C.

N.Y.

N.C.

Md

D.C.

Va

Md

Md

Tenn

Pa

D.C.

D.C.

N.Y.

N.Y.

Ohio

Va

D.C.

D.C.

D.C.

Ark

D.C.

N.Y.

Va

Va

D.C.

D.C.

D.C.

D.C.

N.Y.

D.C.

D.C.

N.Y.

D.C.

D.C.

D.C.

Md

Va

Calif

Redditt, Madeleine Sophie B.S. 1950, St. Joseph College	Pa.	Reinhold, Franklin Widman B.S. 1950, Temple University	Va.
Redfern, Nancy Tusler	Va.	Reinitz, Eva	D.C.
Reid, Mary Margaret	Canada	Reinsdorf, Terry Michael	N.Y.
Reid, Joseph C., Jr. B.S. in Eng. 1944, Tufts College	Md.	Reist, Roger Stanley	Pa.
B.F.E. 1948, The George Washington University		Reith, John Lanyon	D.C.
Reid, Mary Catherine A.B. 1929, University of Kentucky	D.C.	A.B. 1947, University of Wisconsin	
Redwitz, Margaret Kathi Adele		A.M. in Govt. 1951, The George Washington University	
Reed, Elizabeth Adelaide	D.C.	Reither, Wayne Casimir	Calif.
Reed, Gladys Lorraine	Va.	Reitman, Morton	Md.
B.S. 1944, Wilson Teachers College	D.C.	A.B. 1941, Transylvania College	
Reed, Judson Daland		M.S. 1950, University of Kentucky	
Reed, Margaret Murchison	D.C.	Reitman, Robert Stephen	N.J.
Reed, Ralph Donald	D.C.	B.S. 1941, The George Washington University	
B.S. 1944, University of Maryland	Md.	Relfe, Robert Wylie	D.C.
Reed, Robert Hammond		B.S. 1944, University of Maryland	
Reed, Shirley Patricia	Colo.	Remaley, Charles Bertella	Md.
Reese, Joseph Revie	Va.	B.S. 1948, Allegheny College	
Reese, James Conniff	Mont.	A.M. 1948, The George Washington University	
A.B. 1951, The George Washington University	D.C.	Remenyi, Gerni A.	Peru
Reese, William Dayton, Jr.		A.B. 1948, Catholic University of Lima, Peru	
Reeside, Gloria Bolling	D.C.	Remers, Janice	D.C.
Reeves, Loretta Mae	D.C.	Remler, James Stewart	Md.
Regan, John Vincent	D.C.	A.B. 1951, Indiana University	
B.S. in E.E. 1950, Tufts College	D.C.	Rems, J. Paul, Jr.	N.Y.
Reggia, Frank		A.B. 1948, Cornell University	
Reid, Robert	Md.	Remsburg, John Everett	Va.
Reiber, Beverly Ann	N.J.	B.S. in Ed. 1949, University of Virginia	
Reich, Joseph Daniel	Md.	Remus, Madelon Jean	D.C.
A.B. in Govt. 1952, The George Washington University	D.C.	Remus, Norma Ruth	D.C.
Reich, Norma Marcia		Remuda, Mildred Louise	Va.
Reichow, Estelle Vernon	D.C.	Remelan, William S.	N.M.
Reid, Alexander Blann	D.C.	Remro, Julian Carroll	Fla.
A.B. 1950, The George Washington University	Md.	B.S. in Aero Eng. 1948, University of Michigan	
Reid, Ann Madison		Renfro, Ray Homer	Fla.
Reid, Conrad Sanford	D.C.	Renick, Martha Miller	Va.
Reid, George Washington	Va.	Reno, Raymond Howard	Ind.
B.S. in Ed. 1950, Waynesburg College	Pa.	A.B. 1949, A.M. 1951, The George Washington University	
Reid, James Stone		Renz, Henry Augustus III	Va.
Reid, John Clifton	D.C.	Reque, Rose Bertha	D.C.
Reid, Joseph Bernard	Va.	Reschell, Cyril	N.Y.
A.B. in Ed. 1949, Washington Missionary College	Ga.	B.S. 1949, University of Missouri	
Reid, Mary Louise		Restuck, Leroy David	Ill.
Reid, Phyllis Marion	Md.	B.S. 1951, Wilson Teachers College	
A.B. 1949, University of British Columbia	D.C.	Reuther, Albert Horst	Ohio
Reid, Richard Jones, Jr.		B.S. in E.E. 1950, University of Dayton	
B.S. 1941, United States Naval Academy	N.C.	Reynolds, Doris Dovel	Md.
Reid, Robert David	Va.	Rev, Edwin D.	N.Y.
Reidy, John Cornelius, Jr.	Va.	Reymer, Anna Rachael	D.C.
Reidy, Mary Elizabeth	Pa.	Reymer, Stephen Edward	D.C.
A.B. 1949, Marywood College		Reynolds, Gerald George	Minn.
A.M. 1951, Catholic University of America		A.B. 1941, St. Olaf College	
Reilly, Eugene Richard		A.M. in Ed. 1949, The George Washington University	
Reilly, Henry Harold, Jr.	N.Y.	Reynolds, Darrell Frank	Va.
Reims, Evelyn	Calif.	Reynolds, Delos Hall	Md.
A.B. 1935, Salem College	D.C.	Reynolds, Elizabeth Wrenn	Va.
Rein, Carolyn Rose		Reynolds, Frank Edwin	Md.
Reinbrecht, Georgeanna Downing	Md.	Reynolds, Irene B.	Va.
Reiner, Robert Houston	Md.	Reynolds, James Edwin	Md.
Reingold, Nathan	Calif.	Rhame, Richard Coleman	N.Y.
A.B. 1948, A.M. 1948, New York University	D.C.	A.B. 1950, Princeton University	
Ph.D. 1951, University of Pennsylvania		Rhee, Moon Young	Korea
		Rhoads, John Charles	Pa.
		B.S. 1952, St. Francis College	

Rhodes, Eric Foster	Va.	Richmond, Jean Sprague	Men.
A.B. in Ed. 1950, A.M. in Ed. 1952, The George Washington University		A.B. 1952, Bates College	D.C.
Rhodes, Robert Winters	Va.	Richmond, Richard Morton	Va.
Road, Mohamed Amin	D.C.	B.S. 1953, Marietta College	
Ribera, Roger Candia	D.C.	Richmond, Roy George	East.
Rice, Sally Anne	D.C.	A.B. 1953, The George Washington University	Va.
Rice, Charles Fenton, Jr.	N.Y.	Richmond, Stoughton	Va.
Rice, Donald Harvey	D.C.	Richter, Henry Edward	D.C.
Rice, Eleanor Stone	Mass.	Rickett, Ernest Gene	Pa.
A.B. 1940, Colby College		Riddle, Helen B.	N.C.
Rice, Gertrude Bruce	Va.	Riddle, James	
Rice, John Lalor	Md.	Riddle, Sybil Corbett	Va.
Rice, Lawrence K.	Ky.	A.B. 1952, Agnes Scott College	
Rice, MacDougal	Va.	Ridge, Jeanette Shapiro	D.C.
B.S. 1951, Virginia Polytechnic Institute		A.B. 1952, Brooklyn College	
Rice, Mary Josephine	D.C.	Ridgway, James William	Va.
A.B. 1951, Catholic University of America		B.S. 1949, University of Kentucky	
Rice, Mildred Sherill	Md.	Ridgeway, Jesse Edward	W.Va.
A.B. 1949, Catawba College		A.B. 1946, The George Washington University	
A.B. 1950, University of North Carolina		Ridgeway, Paul Wilson	Va.
A.M. 1942, University of Virginia		A.B. 1934, Shepherd College	N.J.
Rice, Pauline Adele	D.C.	A.M. 1939, West Virginia University	Ohio
Rice, Peter Paul	D.C.	Ridgway, David Baxter	
B.S. 1948, Pennsylvania State Teachers College, Mansfield		Ridyard, Lorna Ann	
Rice, Robert Emmert	Md.	Riecken, Richard Charles	Md.
Rice, Russell Glenn	Mo.	A.B. in Govt. 1952, The George Washington University	
Rice, Vincent Russell	D.C.	Rieger, Rebecca E.	
Rieh, Peter Michael	Va.	A.B. 1940, Hunter College	
Rieh, Richard Budge	Md.	A.M. 1941, Columbia University	D.C.
A.B. 1952, University of California at Los Angeles		A.M. 1952, Catholic University of America	Over.
Richards, Burton Morgan	Va.	Krieger, Nena Nettie	D.C.
Richards, John Lamb	D.C.	Rigert, Joseph Charles	Va.
Richards, Joseph William	Ky.	Riggs, Robert Meldrum	
Richards, Lois Compton	Va.	Riggs, Thomas Samuel	Ind.
Richards, Robert Baker	D.C.	A.B. 1951, West Virginia University	Norway
A.B. 1942, University of Wisconsin		Rightley, Joan Carol	Md.
Richards, Shirley Howarth	D.C.	Riker, Margaret	
A.B. 1951, The George Washington University		Riismandel, Elli	Iowa
Richards, Whitman A.	D.C.	Diploma in Law 1943, University of Tartu, Estonia	N.J.
B.S. 1951, Massachusetts Institute of Technology		Riker, Charles Clarkson	
Richards, William Robert	D.C.	Riker, Robert Peter	Md.
Richardson, Anne F.	Mass.	B.S. 1951, Villanova College	N.Y.
A.B. 1951, Radcliffe College		Riley, Barbara Joan	D.C.
Richardson, Henry A.	Md.	Riley, Donald Joseph	D.C.
Richardson, Henry Lawrence	D.C.	Riley, Helen Irene	
A.B. 1948, Bennington College		Riley, John Edwin	Mich.
Richardson, James Augustine	Va.	B.S. 1951, Wilson Teachers College	
A.B. 1952, The George Washington University		Riley, Wallace Don	
Richardson, James Pascal	Va.	Ph.B. 1947, University of Chicago	Va.
Richardson, Laverne Helen	Calif.	B.B.A. 1940, M.B.A., LL.B. 1952, University of Michigan	D.C.
Richardson, Ralph Dan	D.C.	Rimmerman, Brooke M.	Md.
Richardson, Robert Owen	Mo.	Rinaldi, Charles Edward	Md.
B.S. 1946, Drury College		Rinaldi, Frances Rose	N.Y.
Richman, Donald William	Canada	B.S. 1951, Wilson Teachers College	Md.
Richman, Irwin	N.Y.	Rincon, Orlando Louis	N.Y.
Richman, George Lowell	D.C.	Rinde, Harold Edwin	Colo.
B.S. 1930, U.S. Naval Academy		Rinehart, Albert Walton	N.Y.
M.S. 1928, Columbia University		B.Arch. Eng. 1940, Catholic University of America	D.C.
Richmond, Alfred Wright	Md.	Rine, Carl Ewald	N.Y.
Richmond, George	Va.	B.S. 1950, Madison College	D.C.
A.B. 1951, The George Washington University		Ring, Donald Francis	N.Y.
Richmond, James Oraman	N.Y.	Rinick, Wayne Joseph	
A.B. 1950, Ohio Wesleyan University		Rinne, Otto Michael	
		Riordan, Francis Robert	
		B.B.A. 1952, Manhattan College	

Students Registered

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Ripley, Julien A.	N.Y.	Roberts, Jack Earl	Ariz.
Rios Lugo, Miguel Juan	Puerto Rico	B.S. 1952, Brigham Young University	
A.B. 1951, The George Washington University		Roberts, John Arbor	D.C.
Rischn, Frances	N.Y.	Roberts, John Raymond	Ind.
A.B. 1950, New York University		A.B. 1953, The George Washington University	
A.M. 1952, Middlebury College		Roberts, Lloyd Donald	Va.
Riskin, Aaron	Md.	Roberts, Mary Kendall	Va.
A.B. in Govt. 1953, The George Washington University		Roberts, Reed Turney	Md.
Ritchie, Calvin Donald	Va.	B.S. 1923, U.S. Naval Academy	
Ritchie, Fred Monks	Md.	M.B.A. 1931, Harvard University	
B.M.E. 1949, The George Washington University		Roberts, Richard Harper	S.C.
Ritchie, Wilbur Vernon	Va.	A.B. 1951, Erskine College	
Rutchie, Wilma Dean	Okla.	Roberts, Richard Ray	Va.
Ritter, Howard Harold	D.C.	Roberts, Russell Meade	D.C.
Ritter, Mame Jane	Okla.	A.B. 1951, The George Washington University	
A.B. in Ed. 1942, Central State Teachers College		Roberts, Thomas Arthur	D.C.
Ritter, Mary Sandra	D.C.	Roberts, Walter Woolfolk	Va.
Ritue, John Andrew	D.C.	Roberts, William Martin	Maine
Ritz, John	D.C.	B.S. 1941, Bowdoin College	
Ritz, Marie Magdelan	D.C.	Robertson, Anne Lezhazo	Va.
Riva, Daniel Francis	D.C.	B.S. 1951, Pennsylvania College for Women	
Rivara, George Leonard	Conn.	Robertson, Anne Elizabeth	Miss.
A.B. 1952, Syracuse University	N.Y.	Robertson, David Justin	Md.
Rivera, Albert	N.M.	Robertson, Floyd	Va.
B.S. 1952, American University		Robertson, Robert Lynn	Va.
Rivera, Audora Oteyza	Mich.	A.B. 1951, Shepard College	
M.D. 1940, University of the Philippines		Robertson, Robert Stanley	D.C.
M.P.H. 1950, Johns Hopkins University		B.S. 1950, U.S. Naval Academy	
Rivera, Chester Paul	N.Y.	Robertson, Suzanne Joyce	D.C.
Rivoire, Jeanne Louise	Ill.	Ribey, George Vivian	Md.
Rize, John Albert	Va.	Ribey, Paul Andron, Jr.	Va.
Rizley, Max Devone	Okla.	Robinson, Carolyn Alma	Md.
A.B. 1950, University of Oklahoma		Robinson, Frank Samuel	D.C.
Roane, Melvin Chester	Md.	Robinson, Geneva Standley	D.C.
Robarge, Charles Kendall	Minn.	A.B. 1951, The George Washington University	
Robb, David Nelson	Calif.	Robinson, Guy Harold, Jr.	Md.
Ph.B. 1948, University of Chicago		A.B. 1952, The George Washington University	
Robbin, Joseph Sigmund	D.C.	Robinson, Harold LeRoy	Colo.
A.B. 1950, A.M. 1951, The George Washington University		A.B. in Govt. 1952, The George Washington University	
Robbins, David	D.C.	Robinson, Herbert Henry	D.C.
B.S. in E.E. 1950, College of the City of New York		Robinson, James Arthur	Okla.
Robbins, Frederick Heruh	N.Y.	Robinson, Jay P.	Md.
B.S. 1953, University of Pennsylvania		Robinson, John Wesley	Md.
Robbins, James Edwin	Va.	Robinson, Owen Everett	Md.
Robbins, Lois Brown	Va.	Robinson, Rembrandt Cecil	Pa.
A.B. in Ed. 1933, The George Washington University		Robinson, Robert Strother	Va.
A.B. 1950, University of Southern California		B.S. 1949, The George Washington University	
Robbins, Myrtle Opdyke	Pa.	Robinson, Sally Anne	D.C.
Robbins, Orme Campbell	D.C.	A.B. 1949, A.M. 1950, Marshall College	
B.S. 1954, U.S. Naval Academy		Robinson, Stuart	N.Y.
Robbins, Spencer Everett	Calif.	A.B. 1950, Williams College	
B.S. 1942, U.S. Naval Academy		Robinson, Tom Watten	Calif.
Robbins, Theodore Roosevelt	D.C.	A.B. 1949, Occidental College	
Robel, Raymond B.	Md.	Robinson, Warren Clayton	D.C.
Roberson, James F.	D.C.	A.B. in Govt. 1951, The George Washington University	
Roberson, Stanley Leroy	D.C.	Robinson, Jesse	D.C.
Roberson, William Donald	Va.	A.B. 1922, Harvard University	
B.S. 1951, The George Washington University	N.C.	Robinson, Paul Frederick	Alaska
Roberts, Ann Marie		A.B. 1946, LL.B. 1947, Washburn Municipal University of Topeka	
Roberts, Blair Wilson, Jr.	Texas	Robitscher, Jonas Bondi	D.C.
B.S. 1951, North Carolina State College		A.B. 1942, Brown University	
Roberts, Charles Monroe	N.Y.	J.D. 1948, The George Washington University	
B.S. 1951, University of Maryland			
Roberts, Howard Richard			

Roblee, Dana Bush	D.C.	Roller, Glenn Howard	D.C.
B.S. 1927, St. Bonaventure's College		B.S. in Ed. 1953, Southwestern	W.Va.
M.S. 1931, New York State College		Louisiana Institute	
for Teachers, Albany		Rollins, Aniles E.	D.C.
Rochester, Robert Kendall	Va.	B.S. in Ed. 1953, Concord College	Pa.
Rochette, Richard Edward	Mass.	Rolph, John Fletcher III	Va.
Rochmes, Blanche Dauber	Md.	Romano, Frank Louis	Denmark
A.M. 1931, Columbia University		Romeo, Carmel Latell	Va.
Rockefeller, Marilee Wallace	D.C.	Romhild, Anna Elisabeth	
Rockey, Edward Donald, Jr.	Va.	Romney, Jack Harding	Utah
B.S. in M.E. 1951, University of		B.S. 1945, U.S. Military Academy	
Virginia		Romney, Keith Bradford	Md.
Rodhaver, Henry Harrison	Va.	B.S. 1952, University of Utah	Md.
Rodden, Robert Gerald	Va.	Roof, Michael Kitching	
A.B. 1944, University of Pittsburgh		Roof, Richard Rundel	
A.M. 1949, American University		B.S. in Eng. 1952, University of	D.C.
Rostly, Joan Charles	D.C.	Michigan	Va.
Roste, Alex	D.C.	Rooney, John Joseph	Texas
Rodgers, Anna Louise	Pa.	Roos, Kinsey Henry	D.C.
Rodgers, David Arthur	D.C.	Roper, George, Jr.	Brasil
Rodgers, Elizabeth Bertha	D.C.	Ropes, Helen Alden	
A.B. 1945, Smith College		Roque, Maria Dulce	N.J.
Rodgers, Joseph Cook	Md.	A.B. 1945, University of Sao Paulo	Ohio
B.S. 1952, Illinois Institute of		Rosani, Joseph Anthony	
Technology		Rosapepe, James Victor	Va.
Rodgers, Robert Eugene	Va.	B.S. 1949, University of Michigan	
Rodgers, Sanford Leland	D.C.	Roscoe, Mary Frances Carter	Md.
A.B. 1948, Fresno State College		B.S. in Ed. 1946, Longwood College	
Rodien, Ida Joan	D.C.	Rose, Elaine Tenney	N.J.
Rodman, Warner Scott	D.C.	A.B. 1938, American University	
B.S. 1928, U.S. Naval Academy		Rose, Neil Mernen	Va.
Rodman, Norman David	D.C.	B.S. in M.E. 1949, Northwestern	D.C.
Rodriguez, Anita	N.J.	University	Pa.
Rodriguez, Mario Jose	D.C.	Rose, Rae	Pa.
Rodriguez, Nora Mary	La.	Rose, Rita	N.Y.
Rodriguez Hernandez, Aida	Mexico	Rosen, Alvin	Md.
Rodriguez, Santiago	D.C.	Rosen, Herbert Harry	Va.
B.S. 1952, North Dakota State College		Rosen, Richard James	Va.
Rosder, William Hans	N.Y.	Rosenberg, Frank	
Roeck, Joanne	D.C.	Rosenberg, Gertrude	
Rochland, Lavine Herman	Va.	Rosenberg, Harvey	D.C.
B.S. 1950, University of Wisconsin		A.B. 1947, LL.B. 1950, University	D.C.
Roemer, Derek Von	Md.	of Texas	Pa.
Roepe, Herbert B. L.	D.C.	Rosenblatt, Marvin Bruce	Va.
Rosell, Alexander S.	D.C.	Rosenbloom, Joseph	
A.B. 1950, Georgetown University		Rosenbloom, Melvin Louis	
Rogers, David Edward	Pa.	Rosencrans, Dorothy Margaret	
B.S. in C.E. 1954, Rensselaer		Rosenfeld, Sidney Nathan	R.I.
Politechnic Institute		B.S. in M.E. 1951, University of	N.J.
Rogers, George Johnston	Va.	Maryland	N.Y.
Rogers, Margaret Ann	D.C.	Rosenfeld, Thomas Harris	
B.S. 1951, Wilson Teachers College		A.B. 1953, Providence College	
Rogers, Michael Edward	D.C.	Rosengren, John Herbert	
B.S. 1948, Columbia University		A.B. 1949, College of Wooster	
Rogers, Marian Blanche	Md.	Rosenman, Louis	Pa.
Rosinski, Edward Eugene	N.Y.	A.B. 1948, Brooklyn College	Md.
Rosland, Leo	Hawaii	A.M. 1949, New York University	
Rosling, Frederick William		Rosenthal, David	Mass.
A.B. 1950, Yale University		Rosenthal, H. Colman	
Rohlf, Derrill Conway	Md.	A.M. 1952, University of Maryland	Pa.
Rohling, Hedwig Margaret	D.C.	Rosital, Lucien Peter	
Rohrbach, John Charles	D.C.	A.B. 1951, Harvard University	
LL.B. 1949, University of Michigan		Roski, Clem Joseph	D.C.
Rositzsch, John Carl	La.	B.S. in Ed. 1944, Pennsylvania State	
Rosman, Arlin Fwing	Pa.	Teachers College, East Stroudsburg	D.C.
A.B. 1952, Dickinson College	Kans.	Roskos, Norman	N.Y.
Rolander, Robert Dale	Pa.	A.B. 1951, Thiel College	
B.S. 1950, University of Colorado		Roslyn, Albert Steven	
Rolnee, Rudolph Valentin		Rosvy, Leroy Bruce	
B.S. 1949, University of Pittsburgh		B.S. 1949, College of the City of	
		New York	
		LL.B. 1952, New York University	

Students Registered

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Ross, Audrey Beulah	D.C.	Rowan, Michael Beatty	Md.
Ross, Audrey May	Calif.	A.B. 1957, The George Washington University	
Ross, Blair Arthur	Tenn.	Rowand, Roger Benjamin	Conn.
B.S. 1951, U.S. Military Academy		Rowe, Allen S.	Va.
Ross, Charles Bruce	N.C.	Rowe, Dale Maurice	N.C.
Ross, Daniel Michael	Pa.	Rowe, George Frederick	Md.
A.B. 1946, A.M. in Govt. 1948, The George Washington University		Rowe, Harold Meakin	Pa.
Ross, David Gray	D.C.	Rowe, Henry Alexander	Va.
Ross, Frank J.	Minn.	B.S. in E.E. 1917, U.S. Naval Academy	
Ross, John Bernard	D.C.	Rowe, James William	S.C.
Ross, Kip	D.C.	A.B. 1942, Vanderbilt College	
Ross, Leah Edith	Mass.	Rowe, Laurel Lewis	D.C.
Ross, Mary Romans	Minn.	Rowe, Shirley Case	D.C.
A.B. 1949, Grinnell College		A.B. 1950, The George Washington University	
Ross, Veron Bishop	D.C.	Rowe, Teddy Glenn	Mont.
Rossi, Lilianna Maria	D.C.	Rowe, William Dennison, Jr.	Va.
Rossiter, Ruth Eliason	D.C.	A.B. 1952, The George Washington University	
Rost, John Paul	Pa.	Rowe, Willis Case	D.C.
A.B. 1952, University of Pittsburgh		A.B. 1949, LL.B. 1950, LL.M. 1952, The George Washington University	
Roth, David	D.C.	Roan, Daniel	Md.
Rose, Carolyn Alma	Va.	A.B. 1940, Brooklyn College	
Rotermund, Maynard Burr	Calif.	Roy, Gerard Joseph	Maine
A.B. 1951, University of California		Royston, Chilton Wilson, Jr.	Calif.
Rothberg, Samuel Bernard	N.Y.	Rozamus, Michael Joseph	D.C.
B.S. in Eng. 1951, The George Washington University		B.S. 1937, University of New Hampshire	
Roth, Bertha Margarethe	Va.	Rozansky, Gerald Ivan	D.C.
A.B. 1934, Syracuse University		Rozman, Robert Sanford	Va.
B.S. 1940, LL.B. 1948, The George Washington University		Ruane, Ronald Richard	Pa.
Rothgeb, John Martin	D.C.	Ruben, Louis Leonard	D.C.
Rothgeb, Roy Martin, Jr.	Va.	A.B. 1950, The George Washington University	
Rothschilds, Jean Louise	W.Va.	Rubin, Anita Gaye	N.J.
LL.B. 1945, Brooklyn Law School		Rubin, Ann	Ga.
Rothrock, John Allen, Jr.	Va.	Rubin, George	Pa.
B.S. 1945, Northwestern University		A.B. 1953, Pennsylvania State College	
Rothrock, Roger Lee	Ind.	Rubin, Mary Louise	Va.
A.B. 1949, Indiana University		A.B. 1946, College of the City of New York	
A.M. in P.A. 1953, The George Washington University		Rubinstein, Irvin	D.C.
Rothstein, Arnold A.	N.Y.	A.B. 1949, The George Washington University	
A.B. 1941, Brooklyn College		Rubinstein, Julius Louis	Ill.
M.S. 1949, Brooklyn Polytechnic Institute		B.S. 1944, University of Illinois	
Rothstein, Nathaniel	Md.	Rubin, Tim	D.C.
B.S. 1950, M.S. 1953, The George Washington University		A.B. 1951, Highlands University	
Rothwell, Gideon Franklin	Mo.	Rush, Paul Lewis	Ill.
B.S. in M.E. 1949, University of Missouri		Ruckart, Robert Thorne	Va.
Rorkin, Irving Jacob	Md.	Ruckel, Neti	W.Va.
B.S. in M.E. 1946, Virginia Polytechnic Institute		Rucker, Nancy Lee	Va.
Roulabush, Martin Moore	Va.	Ruchelle, William Parry	D.C.
Roulean, John Kueran	Md.	Rudakov, Igor Alexandrovitch	D.C.
Rourke, Robert Alfred	Calif.	Rubin, Arnold James	Va.
B.S. 1942, University of California		Rudolph, Samuel	D.C.
M.S. 1948, Massachusetts Institute of Technology		Ruemel, Robert Frank	Mo.
Rouse, Gladys B.	D.C.	B.S. in M.E. 1943, Washington University	
Rouse, Jean Carolyn	S.C.	Ruesch, Alida Edith	N.Y.
A.B. 1940, University of California at Los Angeles	Ohio	Rufin, Joseph Vincent	D.C.
Routhaker, Helen George		B.C.E. 1941, The George Washington University	
Routhdy, Mohamed Abdel Moneim	D.C.	Ruggles, June Catherine	Mich.
Rowan, Beverly Adele	Egypt	Roulesky, Dorothy Frances	Mass.
Rowan, Leata Peer	D.C.	Rubiman, Terrell Louis	Va.
B.S. in Ed. 1950, Madison College		B.S. in Ch. Eng. 1949, Pennsylvania State College	
A.M. in Ed. 1952, The George Washington University	Va.	Ruhmann, Ludovik George	D.C.
		LL.D. 1935, University of Bratislava	
		Ruiz, Elizabeth	Md.

Ruiz, Madelene Grace	Md.	Ryan, John Clifford	Va.
Rukavina, Mary Magdalene	D.C.	A.B. 1947, Iona College	Pa.
Rule, Elsie M.	D.C.	Ryan, John Michael	Md.
Rulia, Robert A.	Pa.	B.S. 1950, LaSalle College	Va.
Rullman, Anne Meredith Harris	Va.	Ryan, John Powell	
Rumble, Richard Lawrence	Va.	Ryan, Martin James	
Rumford, Donald Chester	Va.	B.S. in E.E. 1949, Manhattan	D.C.
Rumke, Richard William	Va.	College	N.Y.
Runge, Deane	D.C.	Ryan, Phillip Michael, Jr.	Md.
Ruoff, Edward Gerald	Va.	Ryan, Rita Marie	
A.B. 1950, Ohio University		Ryan, William Edward	
A.M. 1951, Syracuse University		B.S. in E.E., B.S. in Math. 1941,	Md.
Ruppert, Thomas Otto	Va.	University of Michigan	
Rusbildt, Lester August	D.C.	Ryan, William James	
Rusby, Paul George	Pa.	A.B. 1947, A.M. 1949, Catholic	Md.
A.B. 1950, Oberlin College		University of America	
A.M. 1951, Haverford College		Ryder, Blanche Elizabeth	Va.
Rusia, Armin	D.C.	LL.B. 1941, Columbus University	D.C.
Magister Juris 1929, University		Ryder, Richard Dooley	Md.
of Latvia		Ryerson, Frank, Jr.	
Doctor Juris 1947, UNRRA University,		Rygg, Paul T.	Md.
Munich		M.S. 1951, Iowa State College	D.C.
Rusia, Robert Heinrich	D.C.	Rykkens, Barbara J.	Md.
Russel, Robert Lee	Kans.	Ryman, Kermit Warren	
A.B. 1951, University of Nebraska		Rymer, Thomas Arrington	Ind.
Russell, Conrad Laird	Md.	B.S. in C.E. 1948, Cornell University	
Russell, Edith Bolton	Md.	Rynerson, Wendell Price	
Russell, James Miller	D.C.	A.B. 1926, DePauw University	
A.B. in Govt. 1949, The George		LL.B. 1929, Indiana University	
Washington University		LL.M. 1947, The George Washington	D.C.
Russell, John Bruce	Md.	University	
Russell, John Mosby	Md.	Ryno, Brooks	N.J.
A.B. 1950, M.S.W. 1952, Catholic		B.S. 1948, Hofstra College	D.C.
University of America		Ryno, Neale Austin	
Russell, Myrtle Ellen	N.D.	Ryon, Joseph William	
A.B. 1944, The George Washington			
University			
A.M. 1952, Georgetown University			
Russell, Patricia Gertrude	D.C.	Saab, Ito Mousa	D.C.
Russell, Richard Angus Kenneth	N.Y.	Sabatini, Edmund John	N.Y.
Russell, Stanton Best	D.C.	Sabella, Richard, Jr.	D.C.
B.S. in M.E. 1940, The George		Sabehir, Freddie Orleans	
Washington University		B.S. 1944, Cornell University	D.C.
Russell, Waldemar Hassinto		A.M. 1947, Columbia University	
British West Indies		Sabin, William Cooper	D.C.
Russell, Warren Allan	D.C.	B.S. 1951, University of Maryland	N.Y.
Russell, William Augustine Jr.	Va.	Sabine, Edward Bliss II	
Russell, William Don	Ga.	Sabol, Eugene	Ill.
Russell, William Manning	D.C.	B.Chem.E. 1950, Rensselaer Polytechnic	D.C.
Russell, Wylie Hayden	Va.	Institute	Va.
A.B. 1944, Ed M. 1948, Oklahoma		Sachnoff, Elaine Ades	
City University		Sachs, Barbara Faith	
A.M. in Ed. 1951, The George		Sachs, Theodore	
Washington University		A.B. 1934, Brooklyn College	Md.
Russo, William Vandrille	N.J.	A.M. 1939, Columbia University	D.C.
Rust, John Dorman	Md.	Sackman, Robert	Calif.
B.S. 1951, University of Maryland		Sadek, Mahmoud Sabry	
Rustigian, Lloyd Armen Garo		Sadler, Frederick T.	
A.B. 1951, Providence College		B.S. 1944, California Institute of	Mch.
Ruth, Joseph Young		Technology	Va.
A.B. 1949, The George Washington		Sadler, Lloyd Elwyn	D.C.
University		Sadote, Joseph Anthony	Va.
Rutkowski, Stanley Walter	Pa.	Sadowski, Eugen	Va.
A.B. 1954, Dickinson College		Sadtler, Helen C.	Conn.
Rutland, James William	Va.	Saffer, John Franklin	
Rutstein, Harry S.	Md.	Sager, Gene Gustav	D.C.
Ryan, Donald C.	D.C.	Sager, Oscar Simon	Va.
Ryan, Donald Winn	Mass.	A.B. 1940, New York University	
Ryan, Dorothy Eloise	Va.	Sager, Shirley Anne	Ind.
A.B. 1950, American University		Saggese, Arnold	D.C.
Ryan, Edward Francis	Va.	B.S. 1951, Georgetown University	
Ryan, James Richard	Pa.	St. Amand, Joseph Maxim, Jr.	
		B.S. in E.E. 1949, Purdue University	
		St. Clair, Barbara Jean	

St. Clair, Betty Jane	Va.	Sanders, Whorton Seymour, Jr.	Md.
St. Clair, John Gilbert	Va.	Sanderson, Agnes Isabel	D.C.
St. Clair, Robert Gordon	Va.	Sanderson, Ruth Irene	N.J.
St. Hilaire, Therese Forest	D.C.	Sandler, Jerome Lewis	D.C.
A.B. 1949, Marygrove College		Sandler, Robert Morton	Va.
A.M. 1951, Catholic University of America		Sanford, Allen McCanne	
St. Jerne, Ethel	D.C.	B.S. in E.E. 1948, University of Illinois	
St. Ledger, James Joseph	Md.	Sankaran, Subbiah	India
B.S. 1950, Pennsylvania State Teachers College, East Stroudsburg		Sankin, Jeanne Monken	Fla.
St. Louis, Armand Joseph	N.Y.	A.B. 1940, Florida State University	
St. Peter, Joseph W. M.	Maine	Sannel, Howard	D.C.
St. Thomas, Dorothy Laird	D.C.	Sanphy, Elizabeth Florence	Maine
Saito, Kazushige	D.C.	Sanson Teran, Carlos Edgar	D.C.
Sakach, Edward Charles	Pa.	A.B. 1951, The George Washington University	
Sakamoto, Harold Kazuto	Hawaii	Sant'Anna, Firmina	Brazil
Sakiotis, Catherine Ermiadis	D.C.	Santer, Melvin	N.Y.
Salata, Irving	D.C.	B.S. 1949, St. John's University	
Salata, Helen Elizabeth	Ohio	M.S. 1951, University of Massachusetts	
Salem, Charles Henry	Va.	Santos, Angelo Dante	D.C.
A.B. 1950, St. Olaf College		Sapienza, Carl Francis	D.C.
Sales, Pierre Lucien	N.Y.	Sapp, Evelyn Virginia	Fla.
A.B. 1947, Columbia University		Sarakontis, Veikko Albert	D.C.
Salins, Edward Joseph	D.C.	Saslaw, Elinor Lee	D.C.
Salive, Gilberto Nestor	Md.	Saulaw, Leonard David	D.C.
Sallas, Gustav Adolph	D.C.	B.S. 1949, College of the City of New York	
A.B. 1950, A.M. 1951, The George Washington University		Sasser, Kathryn	Md.
Salomon, William E.	Md.	Sastroamudjono, Savitri Pradjanawati	Indonesia
Salters, Leonard Andrew	Pa.	Sauer, Herbert Irvin	Md.
A.B. 1950, Kings College		A.B. 1932, Ohio State University	
Salto, Pauline Marie	D.C.	Saul, Howell Jay	N.Y.
Salts, David Ward	D.C.	A.B. 1951, The George Washington University	
B.S. 1945, A.M. in Ed. 1948, Harvard University		Sauls, John Clinton	Ga.
Salvadore, Richard Anthony	N.Y.	Saunders, Anne Green	Va.
B.S. 1951, Siena College		A.B. 1941, Brenau College	
A.M. 1951, Boston University		Saunders, Charles Turner	D.C.
Salvermoser, Rudolph	Pa.	Saunders, James Franklin, Jr.	Va.
Salyers, Edwin Giltner	Ky.	Saunders, Marshall Bennett, Jr.	S.C.
B.S. 1951, Lincoln Memorial University		A.B. 1951, University of South Carolina	
Salsberg, Leon Irving	Va.	Saunders, Sidney	Va.
Salzer, Joseph	Md.	Saussy, George Stone, Jr.	S.C.
Sampson, Archibald Johnston	D.C.	Savage, Arthur Paul	D.C.
A.B. 1915, Stanford University		Savage, Elizabeth	Va.
A.M. 1946, University of California at Los Angeles		Savage, Francis William	D.C.
Sampson, Patricia Edine	D.C.	Savage, Howard Lane, Jr.	Tenn.
Sampson, Robert Baras	D.C.	A.B. 1948, Vanderbilt University	
Sampson, Chester Page	Va.	Savage, John William	D.C.
Samuel, Helen Ethel	Va.	Saville, Richard Charles	Md.
A.B. 1921, Swarthmore College		Sawka, Samuel	D.C.
A.M. in Ed. 1931, The George Washington University		A.B. 1950, Wilkes College	
Samuels, Seymour	N.Y.	Sawyer, Grace Henrietta	N.C.
A.B. 1954, College of the City of New York		Sawyer, Lola Gray	N.C.
San Agustin, Joe Taitano	Guam	Sawyer, Richard Vincent	Va.
Sanchez, Loretta Mae	Va.	A.B. 1950, Southern Methodist University	
Sanchez, Louis John	D.C.	Sawyer, Thomas Knowlton	Md.
Sanchez, Luis Rafael	Puerto Rico	B.S. 1953, American University	
Sanderson, Charles Edward	Va.	Saxe, Charles Lee, Jr.	Md.
A.B. in Govt. 1953, The George Washington University		A.B. in Govt. 1951, The George Washington University	
Sandefur, Diana Destine	N.M.	Saxe, Lillian Mitchell	Va.
Sandemann, Margarita M.	D.C.	Saxon, George Edward	D.C.
Sanders, Jean Lewis	D.C.	Saylor, Mary Louise	Ill.
Sanders, Joseph Thomas	D.C.	B.S. 1916, University of Illinois	
Sanders, Leslie Elwood	Ill.	Saylor, Arlen Richard	Pa.
A.B. 1949, Franklin College of Indiana	Ind.	B.S. 1950, Pennsylvania State Teachers College, West Chester	
Sandora, Mack	D.C.	Saylor, Henry Clay	Md.
		B.S. 1949, University of Maryland	

Sayre, Jean Skinner	Fla.	Schmalz, Ronald Vincent	N.Y.
A.B. 1948, John B. Stetson University		A.B. 1950, St. John's University	D.C.
Sayre, Robert Marion	Oreg.	Schmeltzer, Edward	
A.B. 1949, Willamette University		A.B. 1950, Hunter College	D.C.
Scaffidi, Alfred	Va.	A.M. 1951, Columbia University	Md.
Scanga, John Alfred	Va.	Schmelzer, Eileen Mary	Md.
A.B. in Ed. 1951, Fairmont State College		Schmelzer, Robert Leo	
Scanlan, Sidney Joseph	La.	Schmertz, John Robert	Md.
Scanlon, Maureen Fairclough	D.C.	A.B. 1951, Holy Cross College	Md.
Scarborough, James K.	Miss.	Schmid, Paul Emil, Jr.	Md.
A.B. 1949, LL.B. 1951, The George Washington University		Schmid, Sylvia Maria	Va.
Scarnecchia, Sophie Mary	Ohio	Schmidt, Armand Christian	
Scates, Alice Yeomans	D.C.	Schmidt, Arthur Walter	
B.S. 1916, New Jersey State Teachers College		B.S. 1948, Webb Institute of Naval Architecture	Va.
Ed.M. 1950, Duke University		Schmidt, Christian Joseph	Md.
Scavullo, Joseph James	Md.	B.S. in B.A. 1947, Rutgers University	Pa.
B.S. in M.E. 1941, Stevens Institute of Technology		Schmidt, Dorothy Augusta	Maine
Schachtschneider, Joan L.	Wis.	Schmidt, Nancy Elizabeth	
Schade, Edward Charles	D.C.	Schmidt, Robert Dewey	
Schaefer, Charles H.	Va.	A.B. 1949, Minnesota State Teachers College	Ill.
Schaefer, Dora Blanche	D.C.	Schmidt, Virginia Rose	Md.
Schaler, Robert David	Va.	Schmitt, Earl Joseph	
Schaffner, Gerta H.	D.C.	B.S. 1942, Loyola College	
A.B. 1949, Pennsylvania State College		Schmitt, Frederick Joseph III	Pa.
A.M. 1941, University of Pittsburgh		A.B. 1951, Gettysburg College	
Schantz, Wilmer Shelly	Va.	Schmitt, Richard Frederick	
A.B. 1949, The George Washington University		B.S. 1950, University of Scranton	
Scharf, Elizabeth	D.C.	M.S. 1951, The George Washington University	
Schattner, Theodore Jacob	N.Y.	Schmitz, Carl Leo	Va.
B.B.A. 1941, College of the City of New York		Schmitz, Robert Richard	N.Y.
Schatz, Bernard	N.Y.	Schmookler, Michael	D.C.
Schatzman, Joan Carolyn	D.C.	Schmutz, Charles Andrew	Utah
Schachter, Israel	D.C.	B.S. 1955, University of Utah	
Scheel, Nicholas Tyler	D.C.	Schnack, Dermot Joseph	Va.
Scheerer, Carl R.	Va.	Schnack, George Albert	D.C.
Scheiner, Marian Canter	D.C.	Schnack, Harold Sidney	D.C.
Schellenger, Marshall Leeds	N.Y.	Schneider, Allan Melvin	Mich.
Schellin, Eric Paul	N.Y.	Schneider, Edwin Roy	
A.B. 1948, Columbia University		A.B. 1948, University of Michigan	D.C.
Scheltoma, Johannes Lorenzo	Md.	Schneider, James Philip	Ohio
Scheltoma, Walter Roland	Md.	Schneider, John, Jr.	
Schennmer, Renata Kauschwitz	D.C.	B.S. 1952, John Carroll University	Md.
Scheps, Bernard Percy	Va.	Schneider, Marvin	D.C.
Scherrich, Paul Raymond	Va.	Schneider, Mariette Hawes	Va.
Schick, Joan Henry	Pa.	Schnell, Raymond Anthony	N.Y.
Schick, Patricia Louise	Va.	A.B. 1948, St. Paul Seminary	
Schiff, Carolyn Sylvia	D.C.	Schnipper, Herbert	
Schiffman, Harold	Mass.	A.B. 1949, The George Washington University	
B.S. 1951, The George Washington University		A.M. 1950, University of Michigan	D.C.
Schiffman, Harvey Richard	Mass.	Schock, Carlyle William	D.C.
Schickman, Gayla Hope	D.C.	Schocken, Victor	
Schickman, Jessica Beth	D.C.	A.B. 1942, New York University	
Schick, Glenda Barbara	Md.	M.S. 1944, Oregon State College	
Schickler, William Rhyner	Md.	Ph.D. 1948, California Institute of Technology	Va.
Schinke, Ola Mae	D.C.	Schoech, Barbara Sinclair	Calif.
Schindler, Beverly Jane	D.C.	Schoen, Kenneth Conrad	
Schlageter, Eduardo	Venezuela	B.S. 1950, LL.B. 1952, University of Denver	Va.
Schlepper, Gerald George	Ill.	Schoen, Richard Davis	
Schlosser, Roy Ramon, Jr.	Va.	A.B. 1949, The George Washington University	D.C.
B.F.E. 1952, The George Washington University		M.B.A. 1952, Rutgers University	
Schlissel, Charles Sidney	N.Y.	Schofer, Joseph Louis	Conn.
Schlossberg, Richard Turner	Maine	B.S. 1950, Wilson Teachers College	Germany
B.S. 1948, Bowdoin College		Schonefeld, Herbert Moller	D.C.
Schlumberger, Nancy	D.C.	Scholl, Franz	
		Schonberger, Claude Marvin	

Schooley, Mary Elizabeth A.B. 1953, The George Washington University	D.C.	Schwass, Earl Robert A.B. 1942, Northwestern University	Mich.
Schoolmeester, John Kreisel	D.C.	LL.B. 1949, Georgetown University	D.C.
Schooner, Ned Wallace	Mo.	Schwegel, Douglas Martin	Va.
Schook, Paul Klayton	Mo.	A.B. 1950, Lake Forest College	N.Y.
Schorr, Deena Ruth	N.J.	Schweickart, Alma Bick	N.Y.
Schreiber, Carol Hermine	N.Y.	Schweiger, Irving	D.C.
Schreiber, Hilda	D.C.	A.B. 1919, College of the City of New York	D.C.
A.B. 1944, The George Washington University		Schweitzer, Hiram George	D.C.
Schreiber, Hugh Anthony	Pa.	A.B. 1949, Tufts College	D.C.
B.S. 1931, Villanova College		Schweitzer, Phyllis Ann	D.C.
Schreiber, Mary Christian	D.C.	A.B. 1953, University of Michigan	D.C.
Schreiber, Mary Ruth	D.C.	Schweser, Alfred Joseph	D.C.
Schreib, Mary T.	Va.	Schwichtenberg, Alan Edward	D.C.
Schrimp, Marydalene Corbett	Va.	Schwier, Doris Marie	D.C.
Schuenk, Lorenz Philip	D.C.	Sciavasia, Richard Salvatore	Pa.
Schuer, C. Esther	N.Y.	B.S. in E.E. 1949, Lafayette College	Va.
Schroder, Mary Ellen	Ill.	Scinta, Anthony Harry Ross	D.C.
Schroeder, Brian Hollis	Va.	Scithers, Ruth McKelway	D.C.
Schroeder, Mary Eleanor	D.C.	Seinfeld, Joanne Jonscher	N.C.
Schubert, Robert Kenyon	Ill.	Scoggins, Ellen Cooney	Md.
Schubert, Isabelle Sweeney	Md.	Scoggins, Charles Robert	D.C.
Schuler, Irene Melitta	Va.	A.B. 1948, University of Maryland	
Schuler, James Lee	Wash.	Scollon, Kenneth Marts	D.C.
B.S. 1947, Webb Institute of Naval Architecture		A.B. 1950, The George Washington University	
Schulman, Margaret Belnick	D.C.	Scott, Arthur Andrew	Md.
A.B. 1938, The George Washington University		B.S. 1954, University of Maryland	
Schulte, Roger Reid	D.C.	Scott, Evelyn Clair	D.C.
Schulteis, Charles William	N.C.	A.B. 1940, Northwestern University	
A.B. 1950, University of North Carolina		A.M. 1944, Columbia University	Md.
Schultz, Charles Richard, Jr.	D.C.	Scott, Frank Alexander	D.C.
Schultz, Emily Faye	Md.	A.M. 1940, Duke University	
Schultz, John Joseph	Va.	Scott, Fred Lewis, Jr.	D.C.
Schumacher, Carl Louis	D.C.	B.S. 1949, Pennsylvania State Teachers College, West Chester	Wash.
Schumacher, Donald E.	Va.	Scott, Jean Magnolia	D.C.
B.S. 1951, Minnesota State Teachers College, Mankato		Scott, Joseph Lee	D.C.
Schupp, Kenneth Earl	Va.	Scott, Lawrence Taylor	Va.
Schupp, Louis Albert	D.C.	B.S. 1950, Niagara University	Va.
B.E.E. 1952, The George Washington University		Scott, Martha Jane	D.C.
Schutz, Julian Adolph	D.C.	Scott, Mildred Corbin	Md.
A.B. 1949, Stanford University		Scott, Owen Woody	D.C.
Schwab, Gerald	Md.	Scott, Richard Gordon	D.C.
A.B. 1949, University of Chicago		B.M.E. 1951, The George Washington University	
A.B. 1951, Stanford University		Scott, Robert Mitchell	Va.
Schwartz, Edith Evelyn	D.C.	B.S. in E.E. 1940, Polytechnic Institute of Brooklyn	
Schwartz, Gilbert	N.Y.	Scott, Ruby Lang	Va.
B.S. 1949, Ohio State University		B.S. 1939, Mississippi Southern College	
Schwartz, Howard Ronald	N.Y.	Scott, Ruth Maxwell	D.C.
Schwartz, Milton Allan	N.Y.	A.B. 1942, West Liberty State College	
B.S. 1938, College of the City of New York		Scott, Sarah Lou	D.C.
Schwartz, Philg	N.Y.	Scott, Sue Ann	Md.
A.B. 1952, The George Washington University		Scott, Wilbur Newton	D.C.
Schwartz, Sol	N.Y.	A.B. 1942, West Liberty State College	
B.S. in Ch Eng. 1948, College of the City of New York		Scribner, Albert Willis	Md.
Schwartzman, Beatrice	Md.	B.S. 1949, Northeastern University	
Schwartzman, Everett W.	N.Y.	M.S. 1950, University of New Hampshire	D.C.
Schwartz, Donald F.	Md.	Scrobe, Eleanor Earl	D.C.
Schwartz, Harry Emanuel	N.Y.	Semler, Placido Josefa	Mo.
Schwartzman, Bette Friedler	Md.	Seabough, Paul William	
Schwartzmann, Robert Harry	Va.	A.B. B.S. 1942, Southeast Missouri State College	
		Seaman, Gleason Orville, Jr.	Md.
		Seagrist, Margaret A.	D.C.
		A.B. 1952, Oberlin College	

Search, Harry Edwin	Ma.	Semonian, Edward, Jr.	Va.
Searcy, Clara Arleen	D.C.	Semons, Joan Frances	D.C.
A.B. 1933, Phillips University		Semsker, Ralph Morton	D.C.
Sears, Fred Orison	Va.	Sencindiver, Albert Campbell	Va.
Sears, Jere William	Va.	Sencindiver, John Frederick	Ta.
A.B. 1950, Harvard University		A.B. 1948, Bridgewater College	
Sebold, Charles Joseph	D.C.	Sendejo, Serapio L.	Iowa
Secoo, Vasco De Vincenzi	Brazil	A.B. 1953, The George Washington University	
Seckinger, Daniel Lamont II	D.C.	Senft, Otto Ernst	D.C.
A.B. 1951, The George Washington University		A.B. 1943, B.D. 1946, Wartburg College	
Secor, Jay Ketcham	D.C.	Sengstack, George Fleming	Va.
A.B. 1935, Yale University		B.S. 1951, The George Washington University	
Secosky, John Joseph	Pa.	Senkowski, Dorothy Helen	Ma.
Servat, Patricia Jean	D.C.	B.S. 1951, Simmons College	D.C.
Seebach, Harry Paul	N.Y.	Serabian, Georges Jack	Ma.
B.S. 1951, Georgetown University		A.B. 1950, New York University	D.C.
Seebold, Robert Elvin	D.C.	Serber, Michael	Ma.
Seeger, Edward Gustave	Va.	Serbin, Joseph Costas	Ohio
Ph.B. 1942, University of Wisconsin		Serey, Paul Reynolds	D.C.
Seeger, Edwin Howard	Md.	B.S. 1953, Georgetown University	Va.
A.B. 1951, A.M. 1951, Johns Hopkins University		Sergeant, Russell Lewis	
Seely, Eugene Francis	N.Y.	Serr, Beverly Jean	Va.
Segal, Bernard Robin	D.C.	A.B. 1951, University of North Carolina	
B.S. 1949, The George Washington University		Servidio, Salvatore	Ma.
Segal, Bruce Zoffin	D.C.	Sessler, Albert Louis, Jr.	D.C.
Segal, Eileen	D.C.	B.S. 1950, Iowa State College	Ma.
Segal, Neil	D.C.	Setser, William George	D.C.
Segal, Susan	D.C.	Setzler, Frank Perkins	Ma.
Seganish, Dan	D.C.	Severe, Doris Wilmar	Ma.
Sennari, I. James	D.C.	Severe, Everette	
Seibold, John Paul	Va.	Seversmith, Herbert Furman	
Seidel, Harry Edward, Jr.	Md.	B.S. 1935, A.M. 1938, The George Washington University	Iowa
B.S. 1941, U. S. Naval Academy		Ph.D. 1953, University of Maryland	Iowa
F.J.M. 1952, University of Pennsylvania		Severtson, Doris Joy	Va.
Senden, Herbert Robert	N.Y.	Severtson, Norma Jewel	
Senden, Lillian Ruth	D.C.	Severy, Alice Underwood	Philippines
Serdman, Aaron B.	D.C.	A.B. 1930, University of Michigan	
A.B. 1941, A.M. 1944, Yeshiva University		Sevilla, Jocelina G.	
Seiler, Janet Weakley	Mo.	B.S. 1951, University of the Philippines	D.C.
A.B. 1944, Smith College		M.S. 1953, University of Maryland	
Seiman, Jerome Jacob	N.Y.	Sevin, Charles Henry	Va.
Seiple, Stanley Herkimer	Conn.	Ph.B. 1911, M.B.A. 1938, University of Chicago	
A.B. 1949, University of Connecticut		Seward, Morton William	Ala.
A.M. in Govt. 1952, The George Washington University		A.B. in Govt. 1949, The George Washington University	
Seits, Walter James	N.Y.	Sewell, Toxey Hannon	Fla.
Sejd, James Joseph	Ohio	B.S. 1942, LL.B. 1948, University of Alabama	N.J.
B.S. 1953, Case Institute of Technology		Sexton, Mary Jean	
Seldin, Florence	D.C.	Seymour, Harry Augustus	
A.B. 1950, Brooklyn College		B.S. 1939, U.S. Naval Academy	
Selene, Miguel Tapia	Bolivia	M.S. in E.E. 1949, University of Pennsylvania	Ma.
Sellev, Florence Leiken	D.C.	Seymour, John Aloysius	N.Y.
Seltars, William Clong	N.J.	Seymour, Sherrill Grant	Ma.
A.B. 1951, Muhlenberg College		Shaddix, William Newton, Jr.	Va.
Seltzer, Norman	N.Y.	Shaffer, Fred James	Calif.
B.S. 1948, College of the City of New York		Shaffer, Hugh A. Madison, Jr.	
A.M. 1950, University of Illinois		A.B. 1951, University of Maryland	
Seltzer, Orin	Md.	Shaffer, Richard Warren	Ma.
A.B. in Govt. 1951, The George Washington University		B.S. 1940, U.S. Naval Academy	Va.
Selwyn, Lawrence Seymour	D.C.	Shaffer, Charles Bernard	
B.S. 1950, American University		Shaffer, David Martin	Ohio
Semer, Charlene Esther	Va.	Shaffer, Dina Beatrice	
Seminara, Dominic	D.C.	A.B. 1948, Oberlin College	
Semkew, George Edward	Pa.	Shaffer, John Scott	
Semko, Joseph Elmer	Pa.		
Semmes, David Hopkins	Md.		
A.B. 1949, Princeton University			

Students Registered

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Shah, Ahmed Maqbul			
Shah, Vishwa Parakram			
B.S. 1952, St. Xavier's University, India			
Shabben, Robert Andrew			
Shain, Harold			
B.S. 1949, University of Connecticut			
Shain, Harriett			
A.B. 1953, Womens College of the University of North Carolina			
Shalowitz, Ernest Maurice			
A.B. 1951, The George Washington University			
Shamah, Alfred A.			
Shandorf, Mary Catherine			
B.S. 1951, College of St. Rose			
Shane, Margaret Brinkerhoff			
A.B. 1948, The George Washington University			
Shaner, Francis Ives			
B.S. 1950, Pennsylvania State Teachers College			
Shaner, Peggy Dolores			
Shank, Leonora Tema			
Shanklin, Jay Edwin			
A.B. 1952, Washburn College			
Shanks, Betty Lou			
Shanks, Donald Gordon			
A.B. 1950, University of Cincinnati			
Shannon, Gerald Paul			
Shannon, Roger Hall			
A.B. 1951, Dartmouth College			
Shantz, Roman P.			
B.S. 1948, LL.B. 1951, Georgetown University			
Shapiro, Shirley Gertrude			
Shapiro, Frances H.			
Shapiro, Goodwin			
Shapiro, Gustave			
Shapiro, Leila Cohen			
Shapiro, Leonard Jay			
Shapiro, Lila Sarah			
Shapiro, Nathan Eliazar			
Sharley, Charles Leland			
Sharon, John Hurlford			
A.B. 1940, Princeton University			
Sharon, William Samuel			
Sharp, Allen			
Sharp, Samuel Leonard			
LL.M. 1952, J.D. 1954 University of Warsaw			
Shaw, Clarence Grant			
Shaw, Daryl Winston			
B.S. 1951, Pennsylvania State Teachers College			
Ed.M. 1956, Duke University			
Shaw, Edmund Stillwell			
A.B. 1952, Hofstra College			
Shaw, Juanita Harriet			
Shaw, Mary Eleanor			
Shaw, Russell Ellwood			
Shea, Catherine Virginia			
Shea, Charles Nelson			
B.S. 1952, University of Scranton			
Shen, John Timothy			
Shear, Mary Elizabeth			
Shearer, Aaron L.			
Sheble, Kenneth Edward			
Sheble, John Howard			
A.B. 1943, Williams College			
	Va.	Sheble, Walter Franklin	D.C.
	Nepal	A.B. 1948, Princeton University	
		LL.B. 1952, LL.M. 1953, The George Washington University	
	D.C.	Shectman, Jerry Elmer	D.C.
	Conn.	M.B.A. 1951, University of Chicago	
	N.C.	Shedd, Aaron Neal	Va.
		B.S. in Eng. 1950, Arkansas State College	
	D.C.	Sheehan, Anne Therese	Mass.
		A.B. 1950, Radcliffe College	
		Sheehan, Eugene Edward	Va.
	N.Y.	Sheehy, Leo Joseph, Jr.	Md.
	N.Y.	Sheelor, Nancy Joy	D.C.
		Sheffer, Albert Lester II	Pa.
	D.C.	B.S. 1942, Franklin and Marshall College	
		Sheff, John Frank	Va.
		B.S. 1950, University of Connecticut	
	Md.	Shega, Walter Waldo	Va.
		Sheleman, John James	Pa.
		B.S. 1950, Pennsylvania State Teachers College, Bloomsburg	
	Pa.	Sheley, Margaret Ann	D.C.
	D.C.	A.B. 1952, College of Wooster	
	D.C.	Shell, Gwendolyn Lois	Tenn.
	Iowa	Shelley, Francis Joseph	Pa.
	Ohio	Shelly, George William	N.J.
		A.B. 1951, The George Washington University	
	D.C.	Shelton, Catherine Mary	D.C.
	N.J.	LL.B. 1941, American University	
	N.Y.	Shelton, Junior Fredrick	Va.
		Shelton, Thomas Edwin	D.C.
		Shemeld, John Robert	Va.
		Shepherd, Charles William	Ill.
	D.C.	B.S. 1952, University of Illinois	
	D.C.	Shepherd, Edward Clarence IV	D.C.
	Md.	Shepherd, Robert Henry	D.C.
	D.C.	Sherard, Virginia Mae	D.C.
	N.Y.	A.B. 1950, A.M. in Govt. 1951, The George Washington University	
	Va.	Sherertz, Paul Claiborne	D.C.
	N.Y.	B.S. in E.E. 1945, Duke University	
	N.J.	Sherertz, Wallace Kent	Va.
		Sheridan, Susanne Kline	Calif.
		Sheriger, Paul Doran	Va.
		Sherline, Lee Stanley	Va.
	Md.	Sherman, Charlotte Rosalyn	D.C.
	Ind.	Sherman, Harvey Richmond	Va.
	Md.	A.B. 1950, University of Colorado	
		Sherman, Philip Kingsland	Md.
	Va.	B.S. 1941, U.S. Naval Academy	
	Md.	Sherman, Robert Miller	Texas
		Sherman, Roger William	N.Y.
		Sherman, Stanley Morton	Md.
		Sherman, William Robert	Va.
	D.C.	B.S. 1946, University of Wisconsin	
		J.D. 1951, The George Washington University	
	D.C.	Sherr, Harry	N.Y.
	N.J.	B.B.A. 1950, College of the City of New York	
	Pa.	A.M. 1950, American University	
	Va.	Sherr, Stanley Irwin	D.C.
	D.C.	Sherris, Sidney S.	Va.
	D.C.	Sherwin, William Winsor	Va.
		A.B. 1951, The George Washington University	
	Md.	Sherwood, Joyce	Mich.
	D.C.	B.S. 1945, Central Michigan College of Education	
	D.C.	Shervell, Myron Paul	N.J.
	Va.	Shewmaker, Genevieve Julia	Kans.

Shewmaker, Schuyler Weddington	Va.	Siegel, Harry M.	D.C.
Shields, June Harriett	Calif.	Siegel, Julian Lee	Md.
Shillet, Ernest Rosney	Md.	Siegel, Stanley Ernest	D.C.
Shilling, Charles Wiley	Va.	B.S. 1940, College of the City of New York	
Shimabukuro, Henry	Hawai	A.M. 1950, New York University	D.C.
Shimabukuro, Isamu	D.C.	Siekawicz, Peter	
Shimabukuro, Kaoru	Hawai	LL.D. 1924, University of Lwow, Poland	
A.B. 1953, American University		Sielicki, Peter John	Pa.
Shipley, William Stanton	D.C.	Siemens, John Michael	Wis.
B.S. 1953, The George Washington University		B.S. 1950, University of Wisconsin	N.Y.
Shipman, Fred Waldo	Md.	Siema, Chester Peter, Jr.	
Shipman, Harvey Andrew	Va.	A.B. 1943, Trinity College	Va.
Shipman, Karl Waldo	Va.	Siepenkothen, Werner Henry	D.C.
Shirk, Gilbert LaRue	Pa.	Sigler, James Robert	Va.
Shirley, Todd Wilson	Va.	Sigler, Mary Vincent	D.C.
B.S. in B.A. 1943, Phillips University		Sikorsky, Albert	Va.
Shivers, Anne Barry	Va.	Silberman, Mollie Louise	
Shlesinger, Bernard Edward, Jr.	Va.	B.E. 1914, University of Akron	Md.
B.S. 1948, College of the Holy Cross		Silberman, Tom Albert	Utah
Shoaib, Nishat	D.C.	Siler, Viola	D.C.
A.B. 1953, Karachi University		Silleris, Maira	N.D.
Shoemaker, Charles Erwin	Pa.	Sillers, Colin Bruce	Mass.
Shoemaker, Ida Carolyn	Va.	A.B. 1941, Concordia College	
B.S. in Ed. 1948, Radford College		Silsbee, Henry Otis III	Mont.
Shoemaker, Martha Ann	Ala.	A.B. 1951, American International College	D.C.
B.S. 1941, Texas State College for Women		Silver, Elizabeth Booth	Va.
Shoemaker, Mary Sandra	Md.	Silver, Herbert Bernh	
Shoemaker, Oliver I.	Pa.	Silver, Jack Samuel	
A.B. 1950, University of Pennsylvania		A.B. 1940, The George Washington University	Pa.
Shoemaker, Phyllis L.	Pa.	Silver, Julia Eunice	D.C.
Shoemaker, Robert Frank	D.C.	Silver, Larry Bernard	Wash.
Shoemaker, William Garrett	D.C.	Silver, Marlene	Mass.
Shomahor, Florence Irene	Nebr.	Silver, Richard Abraham	D.C.
A.B. 1928, University of Nebraska		A.B. 1943, Boston University	
Shook, William Paul	D.C.	Silver, Stanley Leonard	N.Y.
Shores, David Matthews	D.C.	B.S. 1951, University of Maryland	
Short, Elizabeth Margaret	Va.	Silverman, Elv	
B.S. 1931, Northern Michigan College of Education		A.B. 1940, New York University	D.C.
Shoup, Carolyn Elizabeth	Va.	B.S. 1947, Columbia University	N.Y.
Showalter, Joanne Fay	Va.	Silverman, Samuel	D.C.
Showell, Archie Albert, Jr.	D.C.	Silvernale, David Milner	N.Y.
Shreve, James Southern	Va.	Silverstein, Abraham	
Shreve, Mary Helena	D.C.	Silverstein, Bennett Lyons	
Shriver, Suzanne Lee	Va.	B.S. 1949, Webb Institute of Naval Architecture	
B.S. 1951, Berea College		M.S. 1951, Massachusetts Institute of Technology	N.Y.
Shrontz, Frank Anderson	Idaho	Silverstein, Esther Wasserman	D.C.
Shropshire, Walter Allen	D.C.	A.B. 1934, Hunter College	N.Y.
Shuba, Robert Joseph	N.J.	Silverstein, Henry Hyman	
Shubeck, Edward Monte	Pa.	Silverstein, Leonard	D.C.
Shue, Frederick James	Va.	A.B. 1950, Hunter College	N.Y.
Shull, Stanley Arthur	N.Y.	Silverstein, Mitzi Lee	
Shulman, Joel	D.C.	Silverstein, Ruth Elizabeth	
B.S. 1952, University of Maryland		B.B.A. 1947, College of the City of New York	Miss.
Shuman, Irwin	D.C.	Sim, Mary Sarah	Ohio
Shumate, Robert Alton	Va.	B.S. in Hosp. Adm. 1952, Northwestern University	
Shupe, Anthony Pierce	D.C.	Simak, Ernest James	D.C.
Shupe, Karen Wray	D.C.	B.S. 1953, Western Reserve University	Md.
Shupe, Walter Carle	Md.	Simi, Lawrence John	
A.B. in Govt. 1944, The George Washington University		Simkins, Raymond Goodwin	
Shuster, Jacob	N.Y.	B.S. 1948, Washington College	Idaho
B.M.E. 1940, College of the City of New York		LL.B. 1951, University of Pennsylvania	
Shutt, Charles Myles	Ohio	Simmons, Boyd K.	D.C.
A.B. 1950, University of Richmond		A.B. 1950, Brigham Young University	
Sibert, Thelma Virginia	D.C.	Simmons, Cledith Gale	
Sickler, William W.	N.Y.		
Sides, Joanne Savina	Va.		
Sieg, Ruth Young	Md.		
A.B. 1948, Ohio Wesleyan University			

Simmons, Fonda Wellings A.B. 1947, Glenville State College A.M. 1950, West Virginia University	W.Va.	Singer, Markus Morton B.S. 1939, New York University	D.C.
Simmons, Haven Ely A.B. 1947, St. John's College LL.B. 1951, Harvard University	Mass.	Singer, Richard Lewin B.S. 1951, Massachusetts Institute of Technology	Mich.
Simmons, John Thomas, Jr. Simmons, Mildred Cora Simmons, Patricia Ann Simmons, Patricia Ann A.B. 1947, Bob Jones University	Md. D.C. D.C. D.C.	Singer, Solomon B.S. 1949, University of Miami	Fla.
Simms, Charles Lebeau Simms, Charles William Simms, William Arthur Simco, Erwin F. Simon, Felix B.S. in Ed. 1950, M.S. in Ed. 1948, Temple University	D.C. Va. D.C. Md. Va.	Singh, Har Bhajan Singh, Lakhbir B.S. 1940, M.S. 1941, Forman-Christian College	India India
Simon, Melvin Simon, Raoul Louis A.B. 1933, University of Minnesota	D.C. Va. D.C.	Sinnard, Shirley Mae B.S. 1953, Mary Washington College	Va.
Simon, Walter Franklin Simonds, Kenneth Wayne Simonsian, George Robert Simonton, Lawrence Joseph Simpkins, James William Simpson, Ann Brown Simpson, Herman LeRoy Simpson, Janet Simpson, John B.S. 1951, University of Illinois	Tenn. D.C. D.C. D.C. D.C. Va. N.C. Ill. Ill.	Sinsel, Edward P. Sipe, Sarah Milne B.S. 1928, Madison College Sipkov, Iwan Dimitrov LL.B. 1940, University of Sofia, Bulgaria J.D. 1947, University of Innsbruck, Austria	Md. Va. D.C.
Simpson, Joseph A.B. in Govt. 1950, The George Washington University Simpson, Margaret Caroline Simpson, Mary Jane A.B. 1948, Duke University A.M. 1951, University of Pennsylvania	Calif. D.C. D.C.	Sirkis, Vincent Anthony Sirkis, Marvin Phillip Sirkis, Samuel Paul Sirota, Helene Carole Siak, Edmund Louis Siskind, Elmer Irwin A.B. 1948, Johns Hopkins University Sisley, James Richmond A.B. 1949, University of Washington	Pa. D.C. D.C. D.C. D.C. Md. Wash.
Simpson, Nathaniel Edward A.B. 1948, Westminster College Simpson, Robert Ellsworth Simpson, Roxie Collie A.B. 1942, Meredith College A.M. 1950, The George Washington University	D.C. D.C. D.C. N.C.	Sison, Bruce Lenn Sithens, Edward Samuel A.B. 1950, The George Washington University Sithens, Lucille Edwards Sitter, Charles Richard Sitton, Paul Lyon A.B. 1948, Emory University A.M. 1950, University of Pennsylvania	N.Y. Md. Md. Ga.
Simpson, Thompson James B.E.E. 1938, Tulane University Simpson, William Albert Simpson, William Francis Sims, Edgar, Jr. B.S. 1951, East Tennessee State College	Va. Fla. D.C. Va.	Sivara, John Sergio Sivowat, Genevieve Ann Sjoholm, Edwin Milton, Jr. Skapars, Anna Skelly, John Thomas Skinner, John William A.B. 1942, Wesleyan University A.M. in Govt. 1947, The George Washington University Skinner, Leonard Morris B.S. 1935, Northeast Missouri State Teachers College	D.C. Pa. Va. Va. Fla. Md.
Sims, Robert Earl Simko, H. Wallace A.M. 1947, University of Minnesota Sinauer, Ernst Maxwell A.B. 1949, Cornell University Sintair, Mary Fuller Sinco, Pilar Asuncion A.B. 1951, University of the Philippines	Calif. Va. Md. Va. Philippines	Skirm, George Louis A.B. 1952, American University Skove, James Rush B.S. 1950, U.S. Military Academy Skuba, Michael A.B. 1952, New York University Skuce, John Everly Slack, Richard Lee B.S. 1950, West Virginia Wesleyan College	D.C. Va. D.C. D.C. Va.
Sincoff, Ellen Barbara Sincoff, Richard Joseph Sinell, Robert Diane A.B. 1942, University of Wisconsin Singer, Alan Milton A.B. 1952, The George Washington University Singer, Lawrence Robert B.S. 1950, The George Washington University	D.C. D.C. Va. D.C. D.C.	Slade, Joseph Alphonses Sladoje, Mark, Jr. Slama, Chester Charles Slattery, Huett Harold Slaughter, Jerry Lee Slayton, William Taft Sledge, Alexander B.S. 1925, U.S. Naval Academy M.S. 1931, Massachusetts Institute of Technology Slenker, Norman Frederick A.B. 1951, Ohio Wesleyan University	Pa. Ohio Md. Md. Md. Md. Ala.
			Ohio

Slickis, John Victor	Md.	Smith, Elmer Trexler	D.C.
Slifer, Harry S., Jr.	D.C.	B.S. 1951, Temple University	Texas
Slivka, Paul George	Conn.	Smith, Emory Clark	
B.S. 1950, Wagner College		A.B. 1920, North Texas State College	
M.S. 1951, University of Georgia			
Sloan, Sheila Mary	Md.	A.M. 1911, University of Texas	
Slote, Morley Jay	N.Y.	LL.B. 1917, Southern Methodist University	Md.
Slotemaker de Bruine, Maria Wilhelmina	Union of South Africa	Smith, Emory Conway	Va.
Slotoher, John Henry	Md.	Smith, Florence Mood	Md.
Sloulin, Helen Elizabeth	Wis.	Smith, Frank Curtis	Md.
B.S.E. 1948, Wisconsin State College, LaCrosse		Smith, Frank White	Japan
A.M. 1952, The George Washington University		Smith, French Crawford	Ala.
Sluk, Michael	Pa.	Smith, Fukuko Koizumi	Md.
Slusher, William Clarey	W.Va.	Smith, George Wright	
A.B. 1952, University of Kentucky		Smith, Gordon Witherby	
Slutsky, Mary	W.Va.	A.B. 1942, Earlham College	Va.
Small, Howard Ashby	W.Va.	A.M. 1947, University of Pennsylvania	Mass.
Small, James Dickerman	Va.	Smith, Grady Fay	D.C.
B.S. 1941, U.S. Naval Academy		Smith, Harold Freeland	
Small, Leonard	Md.	Smith, Hugh Stewart	
A.B. 1949, The George Washington University		B.S. 1923, Northwestern University	
Small, Paul	Md.	A.M. 1932, The George Washington University	Va.
Small, Sally Rubin	Va.	Smith, James Coulson	Nebr.
A.B. 1951, The George Washington University		B.S. 1951, University of Virginia	
Smalling, Clayton Everett, Jr.	Md.	Smith, James Donald	
Smart, Claudia Emma	D.C.	A.B. 1941, University of Omaha	
Smedley, Nancy Ada	Pa.	A.M. 1944, Western Reserve University	S.D.
Smellowsky, Stephen James	D.C.	Smith, James Enlo	
Smeraldi, Angelo John	Conn.	B.S. 1922, South Dakota School of Mines	Md.
A.B. 1949, Indiana University		Smith, James Joseph	Pa.
Smeroskie, Dorothy Marcella	Pa.	B.S. 1950, Hofstra College	D.C.
Smith, Adabelle	D.C.	Smith, James Vaughn	
Smith, Alma Marie	Ill.	Smith, Janet Carol	D.C.
Smith, Archie Lee	Md.	A.B. 1949, Middlebury College	
Smith, Audrey Cornelia	D.C.	Smith, Joseph Edward	Va.
Smith, Barbara Irene	D.C.	B.S. 1951, Georgetown University	D.C.
Smith, Bernard Adrian	Wash.	Smith, Kirk Brannan	
B.S. 1934, U.S. Naval Academy		Smith, Laurance Lewis	
M.S. 1942, Massachusetts Institute of Technology		B.S. in E.E. 1937, University of Nebraska	
Smith, Bernard Charles	Ohio	M.S. in E.E. 1937, LL.B. 1939, University of Illinois	Va.
Smith, Betty Jane Watt	Va.	Smith, Leland Wrightman	Va.
A.B. 1952, The George Washington University		Smith, Luther Earl	
Smith, Carolyn May	Pa.	A.B. in Govt. 1951, The George Washington University	Calif.
B.S. 1953, University of Pittsburgh		Smith, Mansfield Ferry Williams	Md.
Smith, Cecile Frazier	Va.	Smith, Margaret Fay	
Smith, Charles Earl	Md.	A.B. 1936, Queen's University, Canada	Va.
Smith, Charles Neabitt	D.C.	Smith, Marion Elizabeth	N.J.
Smith, Charles Walter, Jr.	Md.	Smith, Marvin Franklin	D.C.
B.S. 1941, U.S. Naval Academy		Smith, Marvin Gillford, Jr.	Va.
Smith, Clarence Irving, Jr.	D.C.	Smith, Mary Elizabeth	
Smith, Clyn Tolbert	Ark.	Smith, Mary Lee	
Smith, Darrell Fenwick	Ariz.	A.B. 1944, University of Richmond	Md.
Smith, Donald David	Md.	A.M. 1950, Johns Hopkins University	
Smith, Donald Joseph	Va.	Smith, Mea Clyde	D.C.
B.S. in Ch.E. 1950, Bucknell University		A.B. 1917, University of Texas	
Smith, Dorothy	Md.	Smith, Mildred Jonathan	Va.
Smith, Earl Clarence, Jr.	Md.	A.B. 1945, Bryn Mawr College	
Smith, Edward Anthony	D.C.	Smith, Mildred Myrick	
Smith, Edward Polk Tatum, Jr.	Pa.	B.S. in Ed. 1932, Florida State University	N.Y.
B.S. in E.E. 1943, U.S. Naval Academy		Smith, Oliver Hugh	
LL.B. 1950, Washington and Lee University		B.S. 1951, St. Louis University	D.C.
Smith, Eleanor Sue	Miss.	M.S. 1953, Syracuse University	
B.S. 1942, Mississippi State College		Smith, Paul Pearce	

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Smith, Pearl			Snyder, Velma Hill	D.C.
B.S. 1937, Kansas State Teachers College, Pittsburg	Kans.		Snowles, William Junior	Md.
Smith, Rebecca Anne			Socular, Marilyn Paper	D.C.
Smith, Rebecca Olson	Md.		A.B. 1949, University of Maryland	
Smith, Richard Leon	D.C.		Socular, Milton Joseph	Md.
Smith, Robert Ross	D.C.		B.S. 1950, University of Maryland	
Smith, Robert Samuel	D.C.		Sodd, Mary Ann	D.C.
Smith, Robert Tynes III	D.C.		B.S. 1952, The George Washington University	
A.B. 1948, The George Washington University	Va.		Sokarto, Endy	D.C.
Smith, Ronald Walter			Sollen, Marvin Clarence	D.C.
B.S. 1953, University of Maryland	Md.		B.Ch.E. 1949, Cornell University	
Smith, Rosemary Webster			Soltz, William Charles	Md.
A.B. 1948, St. Lawrence University	Va.		A.B. 1954, University of Maryland	
Smith, Roy Lindsay			Sokolowsky, William	N.Y.
A.B. 1948, The George Washington University	Md.		A.B. 1951, The George Washington University	
Smith, Stuart Mavoh			Solack, George Andrews	Pa.
Smith, Stuart Stump	D.C.		Soley, Edna Constance	Mans.
Smith, Taysi Taylor	Md.		Solis, Arnold	Ill.
Smith, Thomas Eland	Va.		Sollitt, William	D.C.
Smith, Thomas Eugene	D.C.		Soloff, Howard George	N.Y.
B.S. in Met. Eng. 1951, Missouri School of Mines	Mo.		Solomon, Alvin Lee	D.C.
Smith, Thomas Lewis			Solomon, Lawrence Philip	D.C.
Smith, Timothy Edward	Md.		L.L.B. 1948, The George Washington University	
A.B. 1927, Swarthmore College	Md.		Solomon, Sylvan Emanuel	D.C.
A.M. 1945, New Jersey State Teachers College, Montclair			Solomons, Edward Alva	Va.
Smith, Virginia Vandora			Solomons, Harriett Anne	Va.
Smith, Walker Williams	N.M.		Solt, Samuel James	Md.
A.B. in Govt. 1950, The George Washington University	Va.		Somer, Audrey Marie	W.Va.
Smith, Wayne Leroy			A.B. 1948, University of Missouri	
Smith, William Brice			Somersan, Robaan Said	Turkey
A.B. 1952, Lynchburg College	Colo.		Somerville, Chester Raymond	N.M.
Smith, William Parkhurst, Jr.	Va.		A.B. 1950, Washburn University	
Smith, William Patrick			Somerville, Dorothy Curtis	Md.
Smittigall, Melvin Harold	D.C.		Sonsner, John Gustave, Jr.	D.C.
B.S. 1951, Ursinus College	D.C.		Sonniers, Alice D.	D.C.
Smolton, Clyde Elmer	Va.		A.B. 1923, Smith College	
Smolwick, Fred Helden, Jr.			Sommers, Robert Glenn	Va.
Smolensky, Frank Andrew, Jr.	Md.		Sondheim, Bernice	D.C.
Smoot, Jeanette	D.C.		Sonnagat, Mary Carla	D.C.
Smith, Constantine Joseph III	Va.		Sonnagat, Ralph Ingram	D.C.
Snead, Laura Lucinda	Pa.		Soma, Paul Lawrence	Va.
Snee, Herbert William	D.C.		Sorell, Ann Helen	D.C.
Snider, Eldon Earl	Va.		Sorrell, Frederick Maurice	Va.
Snipes, Louisa Jayne	D.C.		Sosnowski, Lewis	D.C.
Snipes, Mary Ruth	D.C.		Southern, Dennis Elwood	Va.
Snowgrass, Elsie Haynie	D.C.		Sowell, John Broadus	D.C.
B.S. 1940, Mary Washington College	N.C.		B.M.E. 1948, Georgia Technological Institute	
Snowgrass, Ernest Walter	Va.		L.L.B. 1951, The George Washington University	
A.B. 1942, Morris Harvey College	Md.		Spacensky, Anne Caroline	Pa.
A.M. 1940, West Virginia University			Spaeth, Sister Mary Theodore	Pa.
Snow, Bertha			Spaid, Giles Henry	D.C.
A.B. 1928, A.M. 1916, Radcliffe College	Mass.		Spankenberg, Ruth Eleanor	Pa.
Snow, Robert C.			Spanneler, Earl C.	D.C.
Snow, Russell Ray			Spangler, Ronald Tice, Jr.	Fla.
Snyder, Charles W.	11th D.C.		A.B. 1952, Duke University	
A.B. 1935, Gettysburg College	N.Y.		Spargus, H. Marzella	D.C.
E.L.M. 1945, St. Lawrence College			Sparkes, William Aslett	Calif.
B.S. 1952, Northwestern University	Conn.		Sparks, Morris Murray	N.Y.
Snyder, Gerald Joseph			Spear, Harvey Milton	N.Y.
Snyder, Herman Lucene	D.C.		A.B. 1942, Brown University	
Snyder, John M. Konzie	D.C.		L.L.B. 1948, Harvard University	
Snyder, Mark Curtis	S.C.		A.M. 1949, L.L.M. 1952, The George Washington University	
Snyder, Mildred Charles	Md.		Spear, Louis Pioller	Va.
Snyder, Saffur Charles, Jr.	D.C.		B.S. 1919, U.S. Naval Academy	
Snyder, Thomas Guy	Pa.		Speck, Luther Price, Jr.	Ind.
	D.C.		B.S. in E.E. 1945, Purdue University	

Spector, Leon Lubin	D.C.	Spoer, Ann Ethelyn	Va.
Spector, Virginia Elliott	Va.	Spolander, Doris Virginia	N.Y.
Spector, William Samuel	Wis.	A.B. 1936, Adelphi College	D.C.
B.S. 1950, A.M. 1951, The George Washington University		Sponheim, Carol Elaine	D.C.
Speed, Charles Stuart	Ky.	Spool, Helen Markovitz	N.Y.
B.S. 1949, Murray State Teachers College		Spool, James	Va.
Spær, Richard Albert	Ohio	B.E.E. 1950, Cooper Union	
B.Met.E. 1952, Ohio State University		Spore, Burns Walling	D.C.
Speight, Kenneth	D.C.	B.S. 1941, U.S. Naval Academy	D.C.
B.S. 1948, Massachusetts Institute of Technology		Sprawcew, Phillip Temolei	Va.
Speight, Martha	D.C.	Sprogers, Voldemars	Tenn.
Spellman, Lawrence William	Md.	Spurlock, Clifton O'Brien	
Spence, Charles E., Jr.	Idaho	Squyres, Ernest Myrl	
A.B. in Govt. 1950, The George Washington University		A.B. in Govt. 1940, The George Washington University	Md.
Spence, Gene Paul	Va.	Sroka, Edward Andrew	D.C.
Spencer, Claron Chipman	Utah	B.S. 1941, Purdue University	
Spencer, David Kenyon	Va.	Stabler, Carol Lou	Calif.
Spencer, Dora White	D.C.	A.B. 1950, Oberlin College	
Spencer, Maurice Vernon	D.C.	Stachiewicz, Gloria Patricia	Pa.
Spencer, Mabel Sidell	Md.	A.B. 1949, University of California	
M.S. 1946, West Virginia University		Stachowiak, Edward Joseph	D.C.
Spencer, Roland Browning	Va.	B.S. 1951, University of Pittsburgh	
A.B. in Ed. 1936, A.M. in Ed. 1945, The George Washington University		Stafford, Edward Peary	D.C.
Spencer, Thomas Klauder		A.B. 1942, Dartmouth College	
B.S. 1940, U.S. Military Academy		Stafford, Marie Harte	Va.
Spera, Peter James	D.C.	A.B. 1943, Georgian Court College	N.J.
Sperduty, Edward Belmont	D.C.	Stafford, Walter Edward	Md.
A.B. 1950, Brown University		Stafford, William Dillon	Va.
Sperling, Allen Aaron	Md.	Staful, Erma Jean	Va.
A.B. 1946, College of the City of New York		Stagner, Marilyn Leanne	
Sperling, Samuel	N.Y.	Stagner, Sylvia Ardella	D.C.
A.B. 1936, M.S. in Ed. 1939, College of the City of New York		A.B. 1932, University of Washington	
Spero, Abraham	Va.	Stahl, Seymour	Md.
A.B. 1944, LL.B. 1946, The George Washington University		B.S. 1949, University of Miami	
Sperring, Thomas Andrew	Pa.	Stahr, William Earl	Fla.
B.S. 1952, University of Pittsburgh		A.B. 1951, A.M. 1953, University of Maryland	
Spessard, Martin Claude	Md.	Stainton, Hubert M.	Okla.
B.S. 1951, Wake Forest College		B.S. in E.E. 1952, Mississippi State College	N.C.
Spier, Harry Sherwood	Ohio	Staker, Fredia Gloria	D.C.
Spier, Judith Constant	Va.	Staley, Dale Edgar	D.C.
Spiesler, Paul Eppley	D.C.	Stallings, Frederick Lloyd	
Spies, Howard Lester	Ohio	Stallings, Nancy Jean	
Spies, Mark Franklin	Va.	B.S. 1950, Appalachian State Teachers College	Va.
Spiker, Donald Aze	D.C.	Stalknecht, Edward Simpson	Md.
A.B. in Govt. 1951, A.M. in P.A. 1951, The George Washington University		Stallsmith, William Paul, Jr.	
Spillane, Lester Walter	Md.	A.B. 1950, The George Washington University	D.C.
LL.B. 1937, Northwest College of Law, Oregon		Stamelos, William	Va.
Spillman, Georgiana Virginia	D.C.	Stamper, William Clark	Pa.
Spelman, Lawrence Harvey, Jr.	Va.	Stamulis, Aristide S.	
Spoodler, William Everett, Jr.	D.C.	B.S. 1952, University of Pittsburgh	D.C.
Spionelli, Marco Peter	Mass.	Stanell, James McNeill, Jr.	Md.
Spionelli, Thomas Anthony	N.Y.	Stander, Maxwell	
A.B. 1952, Canisius College		B.S. 1942, College of the City of New York	Va.
Spinner, Donald Burke	D.C.	Standifer, J. N.	Calif.
Spinner, J. A. Robert	Ill.	Standish, James Franklin	D.C.
Spitalney, Ronald	D.C.	Standish, Anne Josephine	Ohio
Spitzer, Joseph William	N.Y.	Stanfield, Florence Virgene	Va.
Spitzer, L. Illeonor Elena	D.C.	Stangeohr, Arnold George Edwin	D.C.
Spitzer, Lois Ann	D.C.	Stangeohr, Thomas Alfred	Calif.
Spitzer, Robert Earl	D.C.	A.B. 1950, University of Maryland	D.C.
Spock, Anne I.	Conn.	Stanley, Harvey	D.C.
		Stanley, James Charles	Va.
		Seansberry, Chadwick Leroy	Va.
		Stanton, William Gerald	Md.
		Stanziano, Margaret Josephine	Va.
		Stapleford, LeRoy Brown	
		Staples, Stanley Foster	

Students Registered

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Stapula, Patricia Ann			
Staring, Ralphine Ronald	D.C.	Steinberg, Harvey Bert	Va.
A.B. 1937, University of Oregon	Oreg.	Steinberg, Isobel Maxwell	Miss.
A.M. 1941, Louisiana State University		Steinberg, Janet Lee	D.C.
Stark, Craig Marlowe	Calif.	Steinbrenner, Raymond George	Md.
Starkobin, Abraham Fred	Md.	B.S. 1951, Georgetown University	
B.S. in E.E. 1950, University of Maryland		Steiner, Otto Thomas	Md.
Starr, Dorothy Forshier		A.B. 1949, The George Washington University	
B.S. 1952, Wilson Teachers College	D.C.	Steinger, Jack	N.Y.
Starr, Myron Maffin		A.B. 1953, College of William and Mary	
Starr, Selig	D.C.	Steinhlber, Helen Louise	Ohio
A.B. 1940, Brooklyn College	Md.	Stelck, Elizabeth Ann	Iowa
A.M. 1951, The George Washington University		B.S. 1950, Drake University	
Starr, William Earl		Stelck, William Ardell	Iowa
A.B. 1951, A.M. 1953, University of Maryland	Md.	A.B. 1949, Drake University	
Stathis, Alexander Theophanis		A.M. 1950, The George Washington University	
Stathis, Papara Ethel	Greece	Stell, Jack Powell	Md.
Stathopoulos, Jeannette	D.C.	A.B. 1938, Rice Institute	
A.B. 1952, The George Washington University	D.C.	A.M. 1943, University of Houston	
Statland, Edward Morris		Stengel, Sigrid Renate	D.C.
Statnakis, Estelle Joan	D.C.	Steiger, Howard William	D.C.
Statta, Helen Anna	N.J.	Steiner, Jack Thomas	D.C.
Staub, Barbara Ayler	D.C.	Stepanek, John James	Ill.
Staudt, Lou Edwin	D.C.	A.B. in Govt. 1952, The George Washington University	
Staver, Evelyn Jane	Calif.	Stephens, Alonzo Donald	D.C.
Stavrus, Chris	Va.	B.S. 1951, Drake University	
B.S. 1951, Arkansas State Teachers College	D.C.	Stephens, Dorrward Vinnell	Tenn.
Steadman, Jack Wynant		Stephens, Isabel Alfred	D.C.
A.B. 1949, Wofford College	S.C.	Stephens, John Vernon	D.C.
Stearman, Joel		B.S. 1949, Iowa State College	
A.B. 1950, New York University	D.C.	Stephens, Marvin Massey, Jr.	Va.
Stearns, Arlene Helen		Stephens, Richard Glenn	Ind.
Stearns, Joan	D.C.	B.S. in E.E. 1948, Purdue University	
Stearns, Marlene J.	D.C.	Stephens, Virginia Bush	D.C.
Stebbins, William Cooper	D.C.	A.B. 1950, University of Utah	
A.B. 1951, Yale University	D.C.	Stephenson, Fawson Graham	N.Y.
Steele, Lendell Eugene	N.Y.	Stephenson, Juanita Mudd	S.C.
B.S. 1950, The George Washington University	Va.	Stephenson, Paul G.	D.C.
Steele, Samuel R.		Stern, Beatrice Bee	Fla.
Steele, Arthur D.	Va.	Stern, Edward Arthur	
A.B. 1915, Elon College	N.C.	A.B. 1952, University of Florida	
Ed.M. 1947, University of North Carolina		Stern, Estelle	Fla.
Steeves, Elizabeth Anne		A.B. in Govt. 1951, The George Washington University	
Steffey, Lois Wilson	Mass.	Stern, Gerald	N.Y.
A.B. 1945, Radford College	Va.	B.S. in P.E. 1952, Brooklyn College	
Steffey, Richard Carlisle		Stern, Harriet Ann	Va.
A.B. 1941, Roanoke College	Va.	Stern, Harry L.	Ill.
Steger, Lyall Oscar		A.B. 1952, Yale University	
Singelman, Edward Thomas	Va.	Stern, Henrietta B.	D.C.
B.S. in E.E. 1938, Northwestern University	Ill.	Stern, Howard S.	N.Y.
Stein, Alice Boschan		B.S. 1950, Brooklyn College	
Stein, Helen Louise	D.C.	A.M. 1952, The George Washington University	
B.S. 1951, The George Washington University	D.C.	Stern, Irene Bart	D.C.
Stein, Harsh		Sternet, Raymond Edward	Md.
B.S. 1952, St. Francis College	Md.	Stetson, William W.	Maine
Stein, Louis Bildman	Va.	B.S. 1941, U.S. Naval Academy	
A.B. 1935, Barnard College		Steuer, Arthur	D.C.
A.M. 1940, Bryn Mawr College	D.C.	Stevens, Dorothy Chedaker	D.C.
Stein, Norman Albert	Md.	Stevens, Ernest Evans	D.C.
Stein, Paula M.		B.S. 1937, U.S. Naval Academy	
Stein, Philip	D.C.	A.M. in Ed. 1951, The George Washington University	
A.B. 1953, Brooklyn College	D.C.	Stevens, Jean Johnstone	Va.
	N.Y.	Stevens, Robert Burns	D.C.
		A.B. 1948, The George Washington University	
		A.M. 1950, Catholic University of America	

Stevenson, Eugene Octave Sykes
 Stevenson, George William
 Stevenson, Gertrude Brothers
 Stevenson, Harold Forest
 B.S. in F.S. 1952, Georgetown University
 Stevenson, Malcolm Searle
 A.B. 1950, Bowdoin College
 Stewart, Arthur Gilbert
 B.S. in Ed. 1937, Wilson Teachers College
 Stewart, Barbara Hanton
 Stewart, Charles Todd, Jr.
 A.B. 1946, A.M. 1948, The George Washington University
 Stewart, Clark Berry
 B.M.E. 1948, Clemson College
 Stewart, Howard Robert
 Stewart, Merrick Wood
 B.S. in M.E. 1947, University of Maryland
 Stewart, Marion Barton, Jr.
 A.B. 1951, American University
 Stewart, Milton David
 A.B. 1941, New York University
 M.S. 1942, Columbia University
 Stewart, Noble Ellsworth
 Stewart, Paul Kennedy
 Stewart, Pearl Blanch
 Stewart, S. Grant
 B.S. 1934, University of Nebraska
 Stewart, Walter Joseph
 Stone, James Daniel
 B.S. 1954, Monmouth College
 M.S. 1952, University of Wisconsin
 Strickles, Gerald Eugene
 Strickley, Allen Raymond, Jr.
 Stucknev, William Wallace III
 Stuefel, Maurice Ben
 B.S. 1951, University of Pennsylvania
 Strick, Forrest Harold
 Stiller, Joy Dancus
 A.B. 1940, Hunter College
 Stillman, Arthur McLean
 A.B. 1948, Brown University
 L.L.B. 1953, Harvard University
 Stilmar, Robert Louis
 B.E. 1920, Yale University
 Stiles, Cecil May
 Stidwell, Gerald Francis
 Stidwell, John Pierce
 A.B. 1951, University of Georgia
 Stimpson, Judith Irene
 Stone, Oscar Celine
 A.B. 1950, Oberlin College
 Stowell, Clarence Ford
 Stotling, Edwin T. Mann
 B.S. 1951, The George Washington University
 Stotelman, Joseph
 B.S. in F.E. 1934, Cooper Union
 Stotely, David Wesley
 B.S. 1949, Pennsylvania State College
 Stoth, James Logan
 A.B. 1951, The George Washington University
 Stitt, Nelson Alexander
 A.B. 1938, University of Pittsburgh
 L.L.B. 1952, The George Washington University
 Stivers, Jack Lee
 Stivers, Marianne Louise
 A.B. 1953, Mary Washington College

D.C.
 D.C.
 D.C.
 Pa.
 Maine
 Md.
 Va.
 D.C.
 Md.
 D.C.
 Md.
 Va.
 N.Y.
 Va.
 Pa.
 Md.
 Okla.
 Fla.
 Ill.
 Ohio
 D.C.
 Md.
 Pa.
 Va.
 Md.
 Ill.
 D.C.
 Md.
 D.C.
 Ga.
 D.C.
 W. Va.
 D.C.
 D.C.
 N.Y.
 Md.
 Va.
 D.C.
 Ga.
 D.C.
 W. Va.
 D.C.
 M. Litt. 1940, University of Pittsburgh
 Stoudt, John Matthew
 B.S. in M.E. 1952, Pennsylvania State College
 Stough, Elizabeth Jane
 Stout, Curtis Montague
 Stovall, Nancy Jane
 Stover, James Robert
 B.M.E. 1950, Catholic University of America
 Stover, Joseph Glenn
 A.B. 1950, Dickinson College
 Strand, Harald Warren
 A.B. 1949, St. Olaf College
 A.M. 1950, University of Wisconsin
 Strates, Agatha
 Va.
 Va.
 Va.
 Conn.
 D.C.
 Va.
 Pa.
 Md.
 D.C.
 Ind.
 Tenn.
 Mich.
 Md.
 Ohio
 Md.
 Ohio
 N.Y.
 Md.
 Wis.
 Va.
 D.C.
 D.C.
 N.J.
 Va.
 Md.
 N.Y.
 W. Va.
 D.C.
 Va.
 D.C.
 Pa.
 Fla.
 Md.
 Ohio
 Va.
 Pa.
 Minn.
 D.C.

Strates, Thomas Constantine	D.C.	Sturm, Robert Lee	Okla.
Stratner, Greenville Cash	Pa.	Sturtevant, Frances Seiberling	Va.
Stratton, Evelyn Virginia	D.C.	Sturtevant, Peter Albert	Va.
Stratton, Sidney Junior	D.C.	A.B. 1953, Rollins College	
Straub, Thomas Joseph	Md.	Stutz, Frank August	D.C.
Straub, Ruth Marie	Ky.	B.S. 1931, Lehigh University	
Strauss, Iris May	D.C.	A.M. 1940, The George Washington University	
Strausser, Robert Edward	D.C.	Se, Kelvin	Hong Kong
B.S. in E. F. 1950, Pennsylvania State College		A.B. 1953, Union College, Nebr.	
Straw, Earl Wilson, Jr.	Va.	Suarez, Alejandro	Colombia
B.S. in Ed. 1950, University of Virginia		Bachiller 1951, Colegio San Jose, Colombia	
Strawser, Neil Edward	D.C.	Suber, James Whitley	Md.
A.B. 1961, Oberlin College		B.S. 1928, Mississippi State College	
Strayer, Earl Waldo	Va.	A.M. 1930, The George Washington University	
Streinz, Clare J.	Pa.	Sucre, Yolanda Camarano	Panama
LL.B. 1949, LL.M. 1950, The George Washington University		Suddarth, Davis Smith	Va.
Strickler, David Eugene	Va.	Suddarth, William O'Neal	D.C.
Striebel, LaRue Thomson	Md.	B.S. 1945, U.S. Naval Academy	
Striegel, Joyce Flame	D.C.	Sudlow, Ruby Sharp	Md.
Striker, Corinne Medtrith	Va.	Sugar, Harold Samuel	D.C.
Strong, Thomas Wilt	Va.	A.B. 1949, The George Washington University	
Stronger, Carl John, Jr.	Mass.	Sugarman, Gerald Ivan	D.C.
A.B. 1943, Clark University		Sugerman, Martin Lee	Pa.
Stronger, Guy Warren	Kans.	Sukhontharaksa, Kosol	D.C.
Stronger, Harry Roy, Jr.	D.C.	Sulaiman, Mohammed Shah	Afghanistan
A.B. 1951, University of Delaware		A.B. 1961, University of Kabul	
Stringfield, Richard Everett	N.J.	Sullivan, Daniel David	N.Y.
Litt B. 1939, Rutgers University		Sullivan, Eugene Francis	Md.
Strong, Julius Steven	Md.	B.S. 1948, The George Washington University	
Strong, Corrin Peter	Va.	Sullivan, James Ernest	Va.
A.B. 1948, Yale University		Sullivan, James Richard	Md.
Strong, Stuart Beall	Pa.	Sullivan, Loretta Burnette	D.C.
A.B. 1953, Harvard University		A.B. 1951, Mary Washington College	
Strong, William Washington	Ohio	Sullivan, Patricia Ann	D.C.
B.S. 1944, U.S. Naval Academy		A.B. 1951, Dunbarton College	
Stross, Walter Charles	Ga.	Sullivan, Philip H.	N.Y.
B.S. 1950, Ohio State University		Sullivan, Ray Anthony	Va.
Strother, Helen Gardiner	Texas	Sullivan, Richard Carroll	Va.
Stroud, Ethan Beden		Sullo, Mary Joan	Mass.
LL.B. 1950, Virginia Military Institute		Suminski, Harold	Mich.
Stroud, Josephine Herbert	Texas	Summers, James Aubrey, Jr.	D.C.
A.B. 1948, Sarah Lawrence College		Summersville, David Harold	Pa.
Stroud, Vincent Dennis	Md.	A.B. 1953, Grove City College	
Stroup, Paul Byron	Md.	Sumner, Patsy Ruth	Ohio
Stroup, Margaret Louise	Va.	Sumson, Spafford Ray	Utah
Strupp, Hans Hermann	D.C.	Sundelof, D. Jane	Md.
A.B. 1945, A.M. 1947, The George Washington University		Sunderland, William Frank	Idaho
Strupp, Werner	Md.	Sunderman, Helen Lorraine	Ill.
A.B. 1949, The George Washington University		Sundquist, Marjorie Louise	Nebr.
Struthers, Melvin, Jr.	Iowa	Suzasky, Bernard Arthur	D.C.
Stuart, Barbara Lynn	Md.	A.B. 1950, The George Washington University	
Stuart, David Loring	Va.	Surbaugh, Elizabeth Jean	D.C.
Stuart, Gladys Jeanette	D.C.	Surgen, Raymond Charles	Md.
B.S. 1941, University of Maryland		Surman, Richard Benjamin	Md.
Stuart, Kenneth Earl	Ind.	Surmick, George Arthur	Ind.
B.S. 1924, U.S. Naval Academy		Suro-Pico, Alfonso	D.C.
Stuart, Walter James, Jr.	Va.	B.S. 1932, University of Puerto Rico	
Stuart, William	Md.	Surtees, Charles Donald	D.C.
Studds, Granville Murray	Va.	Susha, James	Va.
Studds, Nancy Early	Md.	Suveni, Joan Angela	Md.
Stump, Loyce Grooch	Md.	Sussmann, Oscar	Md.
Stump, Hilda Joan	D.C.	Suter, Roger Howard	D.C.
Sturges, Martha Faith	Md.	Sutherland, Gertrude Hardy	Md.
Sturm, Herman Mark	N.Y.	Sutphin, Benjamin Van	Md.
A.B. 1918, Brooklyn College		Sustell, Barbara Jane	Md.
A.M. 1949, American University		A.B. 1948, Radcliffe College	
		M.S. 1951, University of Pittsburgh	

Tanchauer, John Ulrich A.B. 1951, The George Washington University	Md.	Taylor, Newell Edward A.B. 1941, Baylor University	Texas
Tanzer, Marlene	Va.	M.Th. 1943, Southern Baptist Theological Seminary	
Tasman, Janet Sybil	Va.	Taylor, Patricia Anne	Md.
Tashley, Arthur Joseph	Md.	Taylor, Evelyn Hoffman	D.C.
Tat, Nelson Monroe B.S. 1949, Wake Forest College	N.C.	Taylor, Robert Albert	Va.
Taton, Francis D.		Taylor, Robert Leslie	D.C.
Tate, Ann Marie Rosta	Tenn.	A.B. 1941, Syracuse University	
Tate, Bojana Aleksa	Yugoslavia	Taylor, Ruth Elizabeth	Md.
Tate, Theodore Anthony	Yugoslavia	A.B. 1941, Blue Mountain College	
Tate, 1952, Tufts College	Mass.	Taylor, Thomas Gordon	Va.
Tate, Marilyn Gosselman		A.B. 1952, Ohio Wesleyan University	
Tate, Morton Jerome	Md.	Taylor, Thomas Hart	Ohio
Tassin, James Stanley	D.C.	B.S. 1949, U.S. Naval Academy	
A.B. 1918, Northwestern State College of Louisiana	Va.	LL.B. 1949, The George Washington University	
Tate, Claude Dean		Taylor, Virginia Ashby	Va.
Tate, Dorothy White	N.C.	Taylor, Walter Asher	Va.
A.B. 1947, Hollins College	Va.	Taylor, William Gordon	D.C.
Tate, James Pronk, Jr.		B.S. 1959, University of Massachusetts	
A.B. 1949, Alfred University	Va.	Taylor, William Russell	Md.
Tate, Marilyn Joan		Teare, Donald Albert	Ohio
Tatro, Leo Francis, Jr.	Va.	A.B. 1953, Yale University	
B.S. 1941, University of Rhode Island	R.I.	Teeter, Beverley Ellen	Va.
Tauber, Lilly Katherine	D.C.	Teeter, Lawrence William	D.C.
A.B. 1947, Peter Pazmany University, Hungary		Templeton, Phyllis Louise	D.C.
Taugner, Mary Snyder		Tenenbaum, Milton	D.C.
B.S. 1947, Northeast Missouri State Teachers College	Va.	B.S. 1951, Syracuse University	
Tavey, Patricia Rees		Tennison, Theodore Magnus, Jr.	D.C.
Tavin, Irvine George	Va.	Tepper, Milton Leo	Va.
Taxin, Frances Sue	Va.	A.B. 1918, A.M. 1939, New York University	
Taylor, Ada Elizabeth	D.C.	Teranes, Richard Stanley	Mich.
A.B. in Ed. 1949, The George Washington University	Va.	Teranda, Bea Marija	D.C.
Taylor, Andrew Eustace		Teranda, John Janis	D.C.
B.S. in M.E. 1947, Tufts University	Md.	Terelaw, Frank Louis	Va.
LL.B. 1951, The George Washington University		Terkeski, Sylvester Adolf	Pa.
Taylor, Carl Thomas		Terrett, Hunter Luzader	Va.
A.B. 1949, Salem College	Md.	Terrett, Stuart Thornton III	Va.
Taylor, Dorothy Jane	Va.	Terrill, Anne Campbell	Md.
A.B. 1941, Rice Institute		Terris, George Nicholas	D.C.
M.S. 1949, Iowa State College		Terry, Anamaria	Va.
Taylor, Edward Rathbun	Texas	Terry, David Ray	D.C.
A.B. 1947, Lafayette College		Terry, Gilmer Roy	Ala.
LL.B. 1950, The George Washington University	D.C.	Terry, Luke Edward	W.Va.
Taylor, Eldon Eugene		B.S. 1948, University of Tennessee	
Taylor, Elton Lewis		M.S. 1949, West Virginia University	
Taylor, Frances Alberta	Md.	Terry, Paul Alfred	Va.
Taylor, Frank, Jr.	D.C.	Testa, JoAnn	D.C.
A.B. 1945, Mercer University	Va.	Teter, Zola Lee	D.C.
Taylor, Frederick James, Jr.	Ga.	Tetrault, Joseph Homer	D.C.
Taylor, Helen Marie	Va.	Tew, Harry James	Va.
Taylor, Herbert Bradley	Va.	Teator, Gretchen Elizabeth	Va.
B.S. 1950, The George Washington University		Thach, John Smith, Jr.	Ark.
Taylor, James Robert		Thackara, James Justin	Md.
A.B. 1951, University of Chicago	Va.	A.B. 1956, Harvard University	
Taylor, John Maxwell		Thackston, Rebekah	Tenn.
A.B. 1952, Williams College	Va.	Thada, Grace Augusta	Va.
Taylor, Mark Stratford	D.C.	Thane, Frederick Lytton	D.C.
Taylor, Mary Landon	Md.	Thatcher, Dale Mortensen	Va.
Taylor, Nancy Lee	Va.	Thian, Ida Seelor	D.C.
		Thayer, Carol Mercer	D.C.
		Thayer, Eugene Seymour	D.C.
		Thayer, Harry Homer, Jr.	D.C.
		Thayer, James Robert	D.C.
		A.B. 1944, Columbia University	
		A.M. 1947, University of Denver	
		Thayer, Jane Hittis	Va.
		A.B. 1952, Cornell University	
		Thayer, Roger Eugene	Va.
		B.S. in E.E. 1940, M.E.I. 1952, Cornell University	

Theobald, Ursula McEnroy	D.C.	Thompson, Laura Josephine	D.C.
Theurer, Gary Lloyd	Utah	A.B. in Govt. 1951, The George Washington University	W.Va.
B.S. 1951, Utah State Agricultural College		Thompson, Loudoun L.	D.C.
Theurer, Ralph A.	D.C.	A.B. 1949, West Virginia University	Va.
B.S. 1932, A.M. 1933, Allegheny College		Thompson, Marion Dorianne	Va.
A.M. 1937, Columbia University		Thompson, Mary Lucile	
Thiebaud, Mary Joan	D.C.	Thompson, Matthew Charles	
A.B. 1949, American University		B.S. in Ch.E. 1949, Iowa State College	N.Y.
Thiede, Frederick Clayton	Mich.	Thompson, Milton Andrew	Md.
A.B. 1951, Western Michigan College		B.S. 1949, St. Lawrence University	Neb.
Thiel, Mitchell Arthur	Md.	Thompson, Myles Paul Philip	
A.B. 1950, Union College		Thompson, Nellie Zetta	
Thigpen, Jeanie LeConte	Va.	A.B. in Ed. 1943, A.M. in Ed. 1946, The George Washington University	D.C.
Tholehen, Hans Augusto	Brazil		Md.
Thomas, Audrey Frances	D.C.	Thompson, Owen Broviere	Kans.
Thomas, Bertha Osborne	Va.	Thompson, Paul Philip	D.C.
Thomas, Betty Jane	Pa.	Thompson, Ralph Franklin	
Thomas, David Duval	Va.	Thompson, Robert Bruce, Jr.	D.C.
Thomas, Dolores Mary	D.C.	A.B. 1949, University of Rochester	
Thomas, Earl Alvan	Md.	Thompson, Robert John	Va.
Thomas, Ellsworth Earl, Jr.	D.C.	B.S. 1949, Drake University	Va.
Thomas, Elna Elva	Minn.	Thompson, Stephanie Edith	Md.
Thomas, Francis Delashmutt, Jr.	Va.	Thompson, Vanda N. Diller	D.C.
A.B. 1951, Dartmouth College		Thompson, Vernon LeRoy	Md.
Thomas, Gregory	Md.	Thompson, Viola Roberta	
Thomas, Howard Francis	D.C.	Thompson, William, Jr.	Wash.
Thomas, James Blake	Ind.	A.B. 1951, Harvard University	
A.B. 1952, Wabash College		Thomson, James Morris	Md.
Thomas, James Louis, Jr.	D.C.	B.S. 1950, State College of Washington	Va.
A.B. 1951, The George Washington University		Thomson, John Richard	
Thomas, Jeanne Elizabeth	Colo.	Thomson, Robert Lee	Md.
Thomas, Lee	Pa.	A.B. in Govt. 1951, The George Washington University	Md.
Thomas, Marie	Tenn.	Thomson, Robert Malcolm	Md.
Thomas, Raymond Edward	D.C.	Thorley, Liane Elizabeth	D.C.
Thomas, Robert Lawrence	Pa.	Thorne, John Watson III	
B.S. in Ed. 1949, Pennsylvania State Teachers College, Bloomsburg		Thorne, Muriel Mae	
Thomas, Robert Johnson	Md.	A.B. 1946, A.M. 1950, Indiana University	Md.
Thomas, Roy Robert	D.C.	Thorne, William Everett	Va.
Thomas, Ruth Lee	Md.	Thornhill, Philip Moore	D.C.
Thomas, Sarah Eugenia	Fla.	Thornhill, Randolph Clay	Calif.
A.B. 1950, Hollins College		Thornton, Clarke Wayne, Jr.	N.C.
Thomas, Valerie Eileen	D.C.	Thornton, Mary Hunter	Md.
Thomas, Yvonne M.	D.C.	Thornton, Ruth Eugenia	
A.B. 1944, University of Paris		Thorp, Alice Crawford	
Thompson, Allan Glasgow	Va.	A.B. 1939, A.M. 1941, Tulane University	D.C.
B.S. in E.E. 1943, Montana State College		Thorp, Edward Garnet	Md.
Thompson, Dorothy Moore	D.C.	Thorp, Harold Shebourne	Denmark
Thompson, E. Joseph	D.C.	A.B. 1952, University of Maryland	Va.
Thompson, Edgar Arthur	Pa.	Thorsen, Vibeke	
B.S. 1948, Purdue University		Thrall, Irvine Russell	Va.
Thompson, Eleanor R.	Iowa	A.B. 1953, Wabash College	Md.
Thompson, Evelyn Drayton	D.C.	Thrift, Fay Ann	Va.
Thompson, Garland Parnell	D.C.	Thrift, Jack Baxter	N.Y.
Thompson, George Dixon	D.C.	Throckmorton, William Robert, Sr.	Calif.
Thompson, Harriette Powell	Va.	Thurau, Norman	
Thompson, Harry Francis	Md.	Thurkelson, John Milton	Pa.
A.B. 1950, The George Washington University		A.B. 1949, San Diego State College	Ark.
Thompson, Henry Ford	Md.	Thurlow, George Albert, Jr.	
A.B. 1949, B.S. 1952, University of Texas		Thurman, Ernestine B.	Md.
Thompson, John Burnetts	Md.	B.S. 1944, College of the Ozarks	
Thompson, John Richard	N.Y.	Thurston, Alice Janet	
Thompson, Judith Covington	N.C.	A.B. 1937, Denison University	Tenn.
B.S. 1953, The George Washington University		A.M. 1948, Northwestern University	D.C.
Thompson, Larry Wolford	D.C.	Thwaitt, Robert Catchings, Jr.	
		A.B. 1949, University of the South	
		Tibbitts, William John	

Tibbitts, Robert Cash A.B. 1955, The George Washington University	Mo.	Tomlinson, Robert Parrish B.S. 1943, Virginia Polytechnic Institute	Va.
Tidlar, Joan Dorothy		L.L.B. 1955, University of Richmond	
Tines, John James	N.J.	Tompkins, James Marion	Va.
Tines, Louis James A.B. in Govt. 1952, The George Washington University	D.C.	B.S. 1939, University of California at Los Angeles	
Tidies, Peter Charles		Tompkins, Robert Joseph	D.C.
Tickett, Howard Erwin A.B. 1960, The George Washington University	Va.	Tompson, Robert Vaughn	Mo.
Tickett, Janet Tanzman	Va.	Tonelli, Loretta Anita	D.C.
Tiedemann, John George A.B. 1951, The George Washington University	D.C.	Toner, Mary Cunningham	Va.
Tierney, Frances T.		Tong, Shao Chi	Md.
Tierney, John Francis	D.C.	Tooley, Robert Lee	Neb.
Tierney, Richard Karl	Md.	Toomey, John Samuel A.B. 1945, The George Washington University	Tenn.
Tinke, Donald James	Calif.	Toompa, Charles Arthur A.B. 1938, West Virginia University	W.Va.
Tinke, John Francis B.S. 1954, The George Washington University	N.J.	A.M. 1950, The George Washington University	
Tilton, Frank James, Jr.	Md.	Toone, Betty Louise	Va.
Tilton, Richard Norman A.B. 1950, Dartmouth College	Mass.	A.B. 1947, Madison College	
A.M. 1954, Johns Hopkins University		Toothman, Byron Roubay	W.Va.
Timchenko, Natalie Alexis		A.B. 1949, Fairmont State College	
A.B. 1952, Queens College	D.C.	A.M. 1948, West Virginia University	
Timken, Clayton Henry		Toothman, Harold Lee	D.C.
Timmins, Joseph Edward, Jr.	Md.	Topalian, Nora Pauline	D.C.
Tins, Leo Martin, Jr.	Va.	A.B. 1949, University of Maryland	
T. L. Maung Kaung	D.C.	Topp, Joseph Donald	D.C.
Tingle, Severn Murray	Burma	Topping, Thomas Edwin	D.C.
Tipton, Clarence Lee	Md.	Toussaint, Arne Helmer	N.Y.
Tipton, Frank Preston	Ga.	Torres, Louis Joseph	Ill.
Tipton, Ronald University of Georgia		Tortey, James Eugene B.S. in F.S. 1951, Georgetown University	Md.
Tisdale, Patrick David B.S. 1950, U.S. Military Academy	N.Y.	Toseanu, Catherine Marie	Va.
Tielman, Joy Lee		Toth, Frank	Va.
Tielman, Rose Eleanor	Va.	Touchette, Robert Henry	Md.
B.S. in Phar. 1950, The George Washington University	Md.	Tourin, Jack A.B. 1941, College of the City of New York	Md.
Tilow, Richard Emory, Jr.	Md.	Townes, Patricia Ann	Fla.
Tittman, Bernhard Rainer		Townsend, Geraldine Catherine	D.C.
Tobias, James Howard	Md.	Townsend, Woodrow Emory	Md.
B.S. 1948, New York State College of Forestry	Va.	Townsend, Harrison Sterling	Md.
Tobin, Ralph Aloysius	D.C.	Towson, Robert Penn, Jr. A.B. in Govt., A.M. in Govt. 1962, The George Washington University	Md.
Toda, Iwako Joe	Va.	Tracy, Francis Gerald	Md.
Todd, Norman Kenneth	D.C.	B.S. 1952, Syracuse University	
B.S. 1941, U.S. Naval Academy	D.C.	Traina, Dominick Robert	Md.
Todd, John Amos, Jr.	Va.	B.S. 1942, University of Maryland	
A.B. 1941, Syracuse University	D.C.	Tranor, George Edward, Jr.	R.I.
Tolte, Teresa Calcina	Hawaii	Traiser, Mabel Oakes A.B. 1952, The George Washington University	Wis.
Tomas, Samuel Thomas	Va.	Tralka, Aloia Victoria	N.Y.
Tomas, Edward	D.C.	Trams, Eberhard Georg B.S. 1946, University of Berlin	Md.
Tolson, Robert James A.B. 1955, The George Washington University	N.Y.	Tranen, Arnold Jay	D.C.
Tolson, Nebo Clark	D.C.	Trattner, Marvin H. B.S. 1949, City College of New York	N.Y.
Tomasoff, Frank Abraham		A.M. 1951, Fordham University	
Tomaso, Carmelo Frank	Va.	Travaglio, Constantine	Va.
Tomkins, John Joseph	Israel	Travis, William Livingston	Ga.
Tomkins, Leonard George	N.Y.	B.S. 1944, U.S. Military Academy	
Tomlinson, Fred Brownell	Pa.	Traxton, Lave Corliss	Md.
Tomlinson, Joseph Ruhl	Va.	Tibovich, Robert L. A.B. 1951, Hobart College	D.C.
	D.C.	Trela, Frances Blanche	
		Trendley, Clifford William	D.C.
		Trentley, Helen Louise A.B. 1953, A.M. 1959, The George Washington University	N.J.

Trent, James Daniel, Jr.	Md.	Tucker, Simon	Va.
Trent, Margaret Cooke	Va.	B.S. 1940, College of the City of New York	
Trescott, Carolyn	Md.	M.P.A. 1941, New York University	
Trevathan, Henry Lawrence	N.C.	J.D. 1951, The George Washington University	
Trevino, Daniel Kulder	Texas	Tudor, Walter John	
B.B.A. 1948, University of Texas		B.S. in C.E. 1951, University of Illinois	
Trien, Le Quang Andie	D.C.	M.S. 1951, University of Wisconsin	D.C.
Tumble, Charles Wayne	Va.	Tuel, Thomas Franklin	Md.
Trimble, South III	D.C.	Tullner, William Wirsing, Jr.	
B.S. 1948, University of North Carolina		A.B. 1947, Temple University	Ore.
Trimmer, Ardith Gay	D.C.	Tumarkin, Gerald Allen	N.Y.
Trittipoe, Theresa Golovin	Va.	Tumulty, John Francis	Pa.
Trittipoe, William Joseph	Va.	Tunnell, Kenneth Welch	
Tton, Robert Augustus, Jr.	Md.	A.B. 1952, Cornell University	R.I.
A.B. in Govt. 1951, The George Washington University		Turco, Edward Vincent	D.C.
Troclair, Anna Rose	D.C.	Turco, Thomas F.	N.J.
Troshinsky, Charles Hilery	D.C.	Turk, Elizabeth Ethel	
Troshinsky, Charlotte Joyce	D.C.	A.B. 1953, The George Washington University	Fla.
Troxell, Elnora Jane	D.C.	Turkiewicz, Jan Michal	
A.B. 1952, Ohio University		B.S. 1951, Juillard School of Music	Va.
Trueblood, Felicity Monroe	Va.	Turner, Gene Carroll	Idaho
A.B. 1953, University of Wisconsin		Turner, Harry Brose	Va.
Trueblood, J. Paul	Idaho	A.B. 1942, University of Idaho	
B.S. in Ed. 1938, B.S. in Min. Eng. 1942, University of Idaho		Turner, Irving	
Trueblood, Sharron Lee	Va.	B.S. 1941, L.L.B. 1948, Georgetown University	
Truesdale, Francis Scott	N.C.	M.S. 1946, The George Washington University	Va.
A.B. 1947, Princeton University		Turner, James Joseph	D.C.
Truworth, Orson William	Va.	B.S. 1948, U.S. Military Academy	Va.
B.S. 1946, Wilson Teachers College		Turner, John Owen	
A.M. in Ed. 1940, The George Washington University		Turner, John Walter	Ore.
Truitt, Alben William	D.C.	B.S. 1948, U.S. Military Academy	
Trombull, James VanAlen	Va.	Turner, Joseph Morton	Ill.
A.B. 1950, University of Connecticut		A.B. 1940, Whitman College	D.C.
Trundle, David	D.C.	Turner, Mary Carolyn	Pa.
A.B. 1943, Western Maryland College		Turner, Nancy Elizabeth	D.C.
Trush, Edward Harry	N.Y.	Turner, Philip Hale	Mass.
A.B. 1949, College of the City of New York		Turner, Roger Wickersham	
LL.B. 1952, Columbia University		Turner, Warren Jewett	Va.
Tsames, John Frank	Va.	B.S. in Ed. 1948, University of Maine	
A.B. 1950, University of North Carolina		Turner, William Pittman	N.Y.
Tsangaris, Neofytos Theodore	Fla.	B.S. in E.E. 1951, Tulane University	
B.S. 1952, Duke University		Tutora, Armistice Margaret	Md.
Tsangaris, Theodora Anastasia	Fla.	Tuttle, Joe	
Tsantes, John Frank	Va.	B.S. 1944, University of Missouri	
A.B. 1950, University of North Carolina		Tuttle, Ralph Godfrey	Va.
Tschurin, Nikolas	D.C.	B.S. in C.E. 1945, University of Washington	D.C.
Tsitouris, Harry G.	W.Va.	Twyman, Nancy Caroline	D.C.
Tubridy, Donald Joseph	N.Y.	Tyler, James Chase	Md.
Tuch, Harold Adrian	Ohio	Tyler, Ruth Nash	D.C.
B.S. 1950, University of Cincinnati		Tyoe, Jacques Barbour	
Tuck, David Hallam	D.C.	A.B. 1950, Shepherd College	D.C.
Tucker, Clyde Davis	Va.	Tyre, Thomas Edward	D.C.
Tucker, Edward Lee	Md.	B.S. 1951, University of Maryland	D.C.
Tucker, Frederick Birchfield	D.C.	Twissell, William James	D.C.
B.S. 1939, U.S. Naval Academy		Tyson, Nancy Elizabeth	
Tucker, Jacqueline Elizabeth	Calif.	Tzaperas, Nicholas Anastasis	D.C.
Tucker, Jared Horton		U	Va.
A.B. 1954, Whittier College		Uhl, Anna	
Tucker, Millard Alford	Va.	Uhl, John Phillip	Pa.
LL.B. 1947, University of Baltimore		Ujewski, Robert Matthew	Va.
Tucker, Nancy Garrison	Va.	A.B. 1950, Duquesne University	D.C.
		Ulatowska, Sophia M.	
		Ulrich, Otto Herman	
		Ulshofer, Clarence Benton	

Umpierre, Francisco Jose A.B. 1950, University of Puerto Rico	Puerto Rico	Vance, Robert S. B.S. 1950, LL.B. 1952, University of Alabama	Ala.
Underhill, Edward Griffin B.S. 1950, M.S. 1957, Columbia University	N.J.	Van de Carr, Francis Rene Van de Carr, Mary Alice	Calif. Calif. Iowa Va.
Underhill, Robert Love, Jr. A.B. 1951, University of Alabama	Va.	Vanderah, Vincent Elmer	
Unger, Donald Leonard A.B. 1950, University of California	Md.	VandeVrede, Robert George B.S. in Ch.E. 1948, Newark College of Engineering	
Unger, Jess Paul B.S. 1941, U.S. Military Academy	Calif.	M.S. in Ch.E. 1951, Rensselaer Polytechnic Institute	
M.S. in C.E. 1949, University of Illinois	Ill.	Van Dreal, Paul Arthur	Mich. Va.
Unger, Richard Wayne A.B. 1949, The Citadel	Pa.	Van Dyke, Eleanor Louise A.B. 1945, Beloit College	
Upkenholz, Willard Clinton B.M.E. 1948, College of the City of New York	Md.	A.M. 1946, Smith College	
Upkrich, Glenn Jerold Underkoffler, John James B.S. 1951, St. Joseph's College, Pa.	D.C.	Van Fleet, William Vernon	D.C.
Upjohn, James Harold A.B. in Govt. 1952, The George Washington University	Md.	Van Grack, Richard	D.C.
Upjohn, Robert Lee	Va.	Van Hagen, Carol Henry A.B. 1952, Marietta College	Md.
Upton, Ronald D.	Nebr.	Van Handenhove, Roger	D.C.
Utann, Charles E.	N.J.	Van Herpe, Leo Bravant	Md.
Utch, David Allan	Minn.	B.S. 1951, American University	
Uzzo, Joseph Anthony	Fla.	Van Himbergen, Virginia	D.C.
Uzun, Semih Aydemir A.B. 1952, Columbia College	Conn.	Van Hise, Louise Marie A.B. 1949, Hood College	N.Y.
Uzeronile, John Robert B.S. 1952, University of Maryland	D.C.	Van Horn, Mildred Evelyn	W.Va. D.C.
Uzey, Frank Herbert	Md.	Van Kleck, Nelson Leeds	D.C.
Utrecht, Frederik William, Jr.	D.C.	Van Meter, Robert M.	N.C.
Uyehara, Geoffrey Umio	Md.	Vann, William Shirley B.S. 1951, Florida Southern College	
Uyehara, Kazuko Buckingham A.B. 1952, Brenau College	D.C.	Van Riwick, Gus Everett A.B. in Govt. 1950, A.M. in Govt. 1951, The George Washington University	Va.
	Japan	Van Sandt, Ruth Berins	D.C.
		Van Sanford, Gordon Myron A.B. in Govt. 1949, The George Washington University	D.C.
		Van Schaack, Howard Douglas A.B. 1950, Grinnell College	Ill.
		Van Sicker, Robert Howard	Md.
		Van Wagenen, Nan Poppell B.S. 1948, Stetson University	Fla.
		M.D. 1952, Temple University	
		Van Wenny, JoAnne Faye	Va.
		Van Winkle, Theodore A.B. 1950, Southern Illinois University	Ill.
		M.S. 1951, Northwestern University	
		Van Zandt, Richard Dewitt	Fla.
		Van Zante, Dominique A.B. 1951, Parsons College	Iowa
		Vaporis, John	Va.
		Varranelli, Andrew Daniel B.S. 1951, Columbia University	Md.
		Varela, Federico Guillermo	Bolivia Conn.
		Vasposko, Andrew John, Jr. B.S. 1951, University of Maryland	
		M.S. 1951, The George Washington University	
		Vasposko, Andre Prowell A.B. 1951, University of Maryland	D.C.
		Varmer, Borge Kvamme Can. Jur. 1950, University of Copenhagen	D.C.
		Varn, Marjorie Julian Varner, Albert Flay, Jr. B.S. 1941, Northwestern University	Fla. Conn.
		Vass, Lois A.B. 1951, Hood College	R.I.
		Vary, Willis Leavenworth B.E.E. 1951, The George Washington University	Va.

V

Vahouny, George Vartkes B.S. 1954, The George Washington University	Va.
Vail, Thomas L. C.	
Vaile, John Richard	Va.
Vaill, Dorothy Louise	Pa.
Vaillancourt, Wilfred Napoleon A.B. 1951, University of New Hampshire	Mass. N.H.
Valderr, Hugo Joseph	Pa.
Valente, Marjory Gargel LL.B. 1944, University of Brazil	Brazil
Valenti, Josephine Carmela B.S. 1945, U.S. Naval Academy	D.C.
Valentine, Marjorie Parks A.B. 1949, University of Chattanooga	Fla.
Valentini, Philip Endicott	Fla.
Valje, Ado	D.C.
Valle, Henry Snowden	D.C.
Valos, Therese R.	Md.
Van Akeren, Barbara Kirsten B.S. in E.S. 1952, Georgetown University	Va. D.C.
Van Bremen, Lois R.	N.Y.
Van Hoggie, Robert Dallas A.B. in Govt. 1949, The George Washington University	Pa. Md.

Vasil, Michael	Pa.	Vines, James Henry	Okla.
Vasquez, Frank Roe	Va.	Vinkenes, Stanley Charles	Va.
Vaughan, Elizabeth Lucille	Ala.	Vinogradoff, Vera D.	Va.
Vaughan, Joseph August	Mexico	A.B. 1931, Allegheny College	
Vaughan, Leonard Walton	Va.	A.M. 1932, Ph.D. 1934, University of Pittsburgh	Italy
A.B. 1949, A.M. 1951, The George Washington University		Viola, Gennaro	
Vaughan, Robert Nash	Md.	A.B. in Govt. 1951, The George Washington University	Del.
Vaughn, Elizabeth St. Vincent	Mass.	Virdin, Donald Odell	Ill.
Vaughn, John Walter	Md.	Viren, Fred Kenneth	Va.
A.B. 1952, Stanford University		Virnelson, Janet Read	N.Y.
Vaupel, Versie Edith	Va.	Vitoulia, Samuel	
Vaupel, Warren Frederick	Va.	A.B. 1953, College of the City of New York	Va.
Vazin, Keumars	D.C.	Vivadelli, Gail Jean	D.C.
A.B. 1945, University of Teheran		Vlahos, Michael E., Jr.	D.C.
Vazquez, Jose Bernardino	Puerto Rico	Voellmy, Mina Elizabeth	Va.
B.S. 1952, Muskingum College		A.B. 1950, Emerson College	
Veasey, Mary Stuart	D.C.	Voelpel, Jack Clare	
Veic, Rosvall Randi	Norway	A.B. 1948, A.M. 1950, The George Washington University	D.C.
B.S. 1951, American University		Vogel, Cornelius Ruediger	
Velander, Wallace Earl	Md.	B.S. in Phar. 1947, University of Leipzig	Va.
A.B. 1950, University of Maryland		Vogel, Ralph Henry	N.Y.
Velos, Robert	Md.	B.S. 1946, Harvard University	D.C.
B.S. 1951, University of Detroit		Vogelsberg, Paul Otto	N.Y.
Vellone, Joseph	N.J.	Volina, Lilian	Md.
A.B. 1938, New Jersey State Teachers College, Montclair		Vollmer, Louis Raymond	
Velthuis, Robert, Sr.	Md.	Volz, Mary Elizabeth	
Venable, Leonard Wesley	Okla.	A.B. in Govt. 1946, The George Washington University	Md.
Venavage, Lorraine Julia	D.C.	Von Brand, Theodor Phillip	
Venezky, David Lester	D.C.	A.B. 1950, Brown University	D.C.
B.S. 1948, The George Washington University		von Herberg, Mary Philomena	D.C.
Venz, Annette Adams	Md.	Von Konz, Feider	
Vendross, Christine	Va.	Maturitat 1945, University of Zurich	
Vernlund, Edna Elizabeth	Minn.	Certificat 1947, Academy of International Law, The Hague	Md.
Vernon, Melvin Calvin	Va.	Vonneuman, Ann Prekopa	Md.
B.S. 1951, University of Richmond		Vonneuman, Nicholas A.	
Vernon, Susan Emily	Md.	A.B. in Govt. 1949, M.C.L. (A.P.)	
Vernon, Richard Enloe	Okla.	1951, The George Washington University	N.Y.
A.B. 1950, University of Oklahoma		Von Riesenmann, Walter Arthur	W.Va.
Versaw, Keith E.	Nebr.	Von Ruden, Marian Ann	Md.
Veveer, Marilyn Joyce	Va.	Voris, Anna Maybelle	Ohio
Veveer, Virginia Dorothy	N.Y.	Vorwerck, Donalo Alfred	
Vespele, Michael James		A.B. 1950, Bowling Green State University	Fla.
A.B. 1952, The George Washington University		Voss, Gilbert Lincoln	
Vest, Stanley Jay	D.C.	B.S. 1951, M.S. 1953, University of Miami	D.C.
Vetter, Rodman Frank	N.J.	Vuelubsky, Bassia	Ala.
A.B. 1951, Dartmouth College			
Via, Elizabeth Bevington	Mo.	Waddell, Mary Jac	
A.B. 1942, A.M. 1933, University of Missouri		A.B. B.S. 1953, Carson-Newman College	Nebr.
Vian, Jacqueline Elizabeth	Va.	Wade, Dorothy A.	Ga.
Vibbard, Warren John	N.Y.	Wade, Guy Lamar	
A.B. 1949, Hobart College		A.B. 1942, Mercer University	Md.
Vibokos, Richard John	D.C.	Wade, Joseph Edward	Md.
B.S. 1950, University of Illinois		Wade, Richard Rudolph	
Vidlak, George	D.C.	A.B. 1948, A.M. 1950, The George Washington University	D.C.
B.S. in Ch. Eng. 1958, Armour Institute		Wadleigh, John Russell	Va.
Vienneau, Wilfred Clifford	Va.	Wadlington, Ann Baker	Pa.
Vieri, Barbara Nanette	Pa.	Waggoner, James William	N.J.
Vigness, Helen Anne	D.C.	Wagner, Cloyd William	Pa.
A.B. 1941, The George Washington University		Wagner, George William	
Vilkins, Margaret Biruta	D.C.	Wagner, James Henry	
Villa, Anthony Joseph	Pa.		
Villan, Clara Barbara	Md.		
Villareal, George Claude	Texas		
B. Journ. 1951, University of Texas			
Vilnius, Shirley Kay	Va.		
Vines, Effie Louise	Va.		

Wagner, Karl Clifford	D.C.	Wall, Samuel	Calif.
Wagner, Lawrence Reginald	D.C.	B.S. 1950, Whitworth College	
Wagner, Marguerite Virginia	D.C.	Wallace, Bradley Nelson	Md.
Wagner, Marion Frances	Mass.	Wallace, David Frederic, Jr.	N.M.
A.B. 1938, Boston University		Wallace, George Cadwallader	D.C.
Wagner, Miriam	D.C.	A.B. 1951, University of Pittsburgh	
Wagner, Richard D.	Oreg.	Wallace, John Widtsoe	Utah
Wagner, Sarah Elizabeth	D.C.	B.S. 1951, University of Utah	
Wabel, Grace Theodora	Minn.	Wallace, Kathryn A.	D.C.
A.B. 1944, College of St. Catherine		Wallace, Wilton Thomas	Md.
Wainwright, Adrian Beegens	Va.	A.B. 1953, Emory and Henry College	
A.B. 1952, University of Virginia		Wallen, Andy Howard	Va.
Waite, Margaret Pribble	Va.	Waller, George Patterson	Mass.
Wakabayashi, Shigem	Japan	Waller, John Edgar, Jr.	Va.
B.S. 1951, Trinity University		A.B. 1950, University of Maryland	
Wahfeld, Paul	D.C.	Waller, William John	D.C.
A.B. 1934, Loyola University		Waller, David Martin	Md.
A.M. 1940, George Peabody College for Teachers		B.S. 1941, University of California	
Wakeman, Priscilla	Va.	Wallick, Robert Daniel	Va.
Wakman, Donald Arvo	Mich.	B.S. in E.F. 1948, B.S. in B.A. 1949, Lehigh University	
A.B. 1950, A.M. 1951, The George Washington University		Wallis, Rodman William	Pa.
Wakonen, Mattie Alice	Va.	Walltoft, George Raymond	D.C.
Walton, Susan Lee	N.Y.	Walowac, Stanley	W.Va.
A.B. 1950, Catholic University of America	Conn.	Walsh, Eleanor Florence	D.C.
Walton, Lewis		Walsh, Eugene John	Wis.
B.S. 1949, College of the City of New York	Md.	B.S. 1951, Marquette University	
Walzak, Virginia Tye	D.C.	Walsh, Jessie Rowdybush	Md.
B.S. 1941, Union College		B.F.A. 1941, Syracuse University	
Walmsky, Edward Pilus	Va.	A.M. in Ed. 1941, The George Washington University	
Walker, Doris Anne	D.C.	Walsh, John J.	Mass.
A.B. 1950, University of North Carolina		A.B. 1947, College of the Holy Cross	
Walker, Ernest Carroll	Md.	Walsh, Norma Jean	D.C.
Walker, George Abner, Jr.	Md.	Walt, Dorothy Elizabeth	D.C.
Walker, Harold Donald	Va.	A.B. 1947, University of California at Los Angeles	
A.B. 1947, The George Washington University		A.M. 1950, University of Iowa	
Walker, Henry Streit	Va.	Walter, Charles William	Md.
Walker, James Joseph	D.C.	B.E.E. 1951, Catholic University of America	
Walker, Joel Malcolm	Md.	Walter, Raymond Ward, Jr.	D.C.
Walker, John Gemmell	D.C.	B.S. in P.E. 1951, The George Washington University	
B.S. 1945, Wilson Teachers College		Walter, Winton Parker	Va.
Walker, John Sheppard Britton, Jr.	D.C.	Walters, Albert Norman	D.C.
Walker, John William	D.C.	Walters, Elvin Winifred	Md.
Walker, Julius Bell	Ala.	B.S. 1947, Lebanon Valley College	
Walker, Mabel M.	Tenn.	A.M. in Govt. 1950, The George Washington University	
A.B. 1952, Smith College		Walters, Era Oakes	Texas
Walker, Mark Edward	Conn.	Walters, Frank John	D.C.
Walker, Marvin John	D.C.	Walters, Ivan Tracy	Md.
Walker, Michael Jerald	D.C.	Walters, Thomas Lucian	Md.
A.B. 1952, The George Washington University		Walton, Floyd Calvin	Ohio
Walker, Peter Brockway	D.C.	A.B. 1940, Mount Union College	
A.B. 1952, Harvard University		Walton, James Richard	Ala.
Walker, Raymond Francis	D.C.	Walton, Laurance Washington	D.C.
B.S. 1950, U.S. Naval Academy	Okla.	Walton, Ralph Wilfred	N.J.
Walker, William David	D.C.	A.B. 1951, Harvard University	
A.B. 1950, Cornell University		Walton, Thomas William, Jr.	Md.
Wall, Conrad Grey	D.C.	A.B. in Govt. 1942, The George Washington University	
Wall, Donald Dean	Md.	Walworth, Kathleen Ann	D.C.
Wall, Enid Russell	D.C.	A.B. 1952, The George Washington University	
Wall, Eulalia Louise	Va.	Walt, Deirdre Drew	Fla.
A.B. 1927, Southern Methodist University	Texas	Wan, Keng Nien	China
Wall, Lynn Allen	Calif.	A.B. 1916, National Tsing Ana University, China	

Wandel, Fred Charles	N.Y.	Waters, Joe Edward	Ky.
B.S. 1945, M.S. 1948, College of the City of New York		B.S. in F.S. 1950, Georgetown University	D.C.
Wang, Ching Chiang	N.Y.	Waters, John Leonard	Va.
B.S. 1952, Iowa State College		Waters, Joyce Elmer	D.C.
Wanner, Albert Jay	Md.	Waters, Leta Lorene	Mich.
Wansor, Richard C.	Pa.	Waters, Shirley May	Ind.
Ward, Albert Wimpy	Va.	B.M. 1952, Aquinas College	D.C.
A.B. 1950, University of Georgia		Wathen, Thomas William	W.Va.
Ward, Anne Radcliffe	D.C.	Watkins, Carolyn Elizabeth	
B.S. 1951, University of Maryland		Watkins, Gail Eugene	Md.
Ward, Clarence Macaulay	Mass.	A.B. 1949, Fairmont College	Ark.
Ward, Edsel Hanes	Calif.	Watkins, Harold Stanley	
Ward, Jack Lee	D.C.	Watkins, Joel Smith, Jr.	
Ward, Jane Carolyn	Va.	A.B. 1951, University of North Carolina	Md.
Ward, John Wesley	Va.	Watkins, Lincoln Arthur	D.C.
B.S. 1950, The George Washington University		B.S. 1951, University of Maryland	
Ward, Rebekah May	Va.	Watkins, Roger Royal	D.C.
Ward, Edith Merrill	D.C.	B.S. 1950, Pennsylvania State College	Ind.
Wardell, Richard Norman	Ill.	Watson, Aenes Ruthe	Md.
B.S. 1952, Illinois Institute of Technology		Watson, Blanche Lewis	Iowa
Warder, Frederick Burdett, Jr.	Va.	Watson, Evan William	
Wardlaw, Gladys Anne	D.C.	Watson, Jack Wilbur	N.C.
Wase, Herbert Withers II	Va.	A.B. 1958, State University of Iowa	Va.
Wase, Robert Stephens	Md.	Watson, John H.	
Wasfield, Richard Myers	Md.	Watson, Paul Morris	
A.B. 1948, The George Washington University		A.B. 1950, Southern Missionary College	Va.
Waring, Joanne Parker	D.C.	Watson, Robert Clay	Md.
A.B. 1955, University of Richmond		Watson, Robert McCulloch	Ind.
Warinner, Robert Irvine	Mo.	B.S. 1941, New York University	Mich.
A.B. 1953, Park College		Watson, Robert Taylor	
Warner, Charles Willard	Va.	Watson, Warren Kenneth	
A.B. 1948, College of William and Mary		B.B.A. 1958, Michigan State College	
Warner, Mary Moore	Md.	M.H.A. 1949, University of Pennsylvania	Va.
A.B. 1944, University of Richmond		Watts, Aubrey Dwight	N.H.
Warner, Nancy Nellis	D.C.	Watts, Gordon Dean	D.C.
A.B. 1951, Catholic University of America		Watwood, Lynn Marion, Jr.	S.P.
Wartnick, Alene Moran	Va.	Watwood, Marshall	Calif.
Watten, Leon Hugh	Pa.	Way, James Leong	
A.B. 1926, Colby College		A.B. 1947, University of California at Los Angeles	Md.
M.D. 1931, University of Pennsylvania		Way, Virginia Vollmer	Ariz.
Watten, Marguerite Elizabeth	D.C.	Way, Wanda Wynn	D.C.
Watson, Mary Perry	D.C.	Wayland, Barbara Ann	Ind.
A.B. 1945, Augustana College		Weatherford, Kathleen Patricia	British West
Watson, Virginia Caroline	D.C.		D.C.
Watson, William Curtis	Va.	Weaver, Andrew Gay, Jr.	Md.
B.S. 1927, University of Florida		Weaver, Arell Edward	
Watrick, Louis Frederick, Jr.	Md.	Weaver, David Paul	D.C.
Watriner, Clifford Marshall	Va.	A.B. 1948, Washington College	D.C.
Wattner, Elizabeth Rouse	D.C.	Weaver, Glenn Eileen	
A.B. 1951, The George Washington University		Weaver, June Virginia	
Washburn, Albert Brooks, Jr.	Utah	A.B. 1951, The George Washington University	Kent.
A.B. 1950, Dartmouth College		Weaver, John William	D.C.
Wasileski, Regina R.	D.C.	Weaver, Nell	Md.
Wasserman, Stanley Burton	Va.	Weaver, William Clark	Pa.
A.B. 1951, University of Virginia		Weaver, William Milton	Va.
Wassink, Robert Arthur	D.C.	Webb, Edwin Yates	Mo.
Wasson, Robert Vernon	Calif.	Webb, Jack Bassett	N.Y.
A.B. 1952, The George Washington University		A.B. 1948, University of Kansas	Tenn.
Wassum, William Blair	W.Va.	Webb, Robert Leslie	Wn.
Waterman, Guy Van Vorst	D.C.	Webb, Russell Nowlin	
Waterman, Irma C.	Mass.	Weber, Arnold Isidor	
A.B. 1952, Clark University		Ph.B. 1940, Marquette University	
Waterous, Willard Mills	Md.	A.M. 1950, Harvard University	
A.B. 1941, Harvard University		Weber, Dean Hahn	
A.M. 1946, Columbia University		A.B. 1950, Boston University	

Weber, George Stillman	N.Y.	Weissbender, Donna Rae	Va.
B.S. 1942, Rockwell University		Weissberg, Tanva Elaine	D.C.
Weber, Helen Eileen	N.J.	Weissblatt, Irving	D.C.
Weber, Karl B.	Pa.	A.B. 1952, The George Washington University	
B.S. 1950, U. S. Military Academy		Weissbord, Fred Edgar	Md.
Weber, Paul	Va.	Weisse, Allen Gardner	Md.
B.S. in P.E. 1947, The George Washington University		B.S. 1948, The George Washington University	
Weber, Reginald Theodore	N.Y.	Weiser, Nancy Lida	D.C.
Weber, Richard Ferdinand	D.C.	A.B. 1950, Beloit College	
Weber, Clark Gibbons	Md.	Weishaar, Inis	V.
Weber, Frances Lee	D.C.	Weiss, Egon Hans	D.C.
Weber, George Armstrong	Va.	A.B. 1948, Brooklyn College	
A.B. 1950, Yale University		M.S. 1950, Brown University	
Weber, Gerald Vernon	D.C.	Weiss, Gudie Aurelia	D.C.
Weber, John Clyde	Ind.	Weiss, Herbert	Md.
Weber, John Leslie	D.C.	B.S. 1949, College of the City of New York	
A.B. 1953, University of Connecticut		M.S. 1954, The George Washington University	
Weber, Robert Lyle	Va.	Weiss, Jay William	N.Y.
Weber, Robert Oswald	Va.	Weiss, Rowena	D.C.
B.M.E. 1947, Ohio State University		B.Ch.E. 1949, Catholic University of America	
Weber, Tom Webber	Va.	Weiss, Theodore	Md.
Wechsler, Harold Herbert	N.Y.	Weissback, Herbert	N.Y.
B.S. 1954, Tufts College		B.S. 1945, College of the City of New York	
Wedge, Robert Lowman	Va.	Weissman, Marvin	Ohio
Wedge, Cynthia Clark	D.C.	Ph.B. 1948, University of Chicago	
A.B. 1949, A.M. 1950, Northwestern University		Weisz, George	D.C.
Wedge, Reford James	Kans.	A.B. 1952, New York University	
A.B. 1949, Berhel College		Weitzman, Mary Cohen	D.C.
Weiler, Gisela Margarette	D.C.	Welch, Byron Kerr	Okla.
Weiler, George Francis	N.Y.	Welch, Fred	Md.
A.B. 1952, Middlebury College		B.S. 1952, University of Maryland	
Wells, Lulu May	Md.	Welch, Michael Crawley	Md.
A.B. 1928, The George Washington University		Welch, Paul Hesse	R.I.
Weller, Arthur J.	Md.	Welch, Richard Noel	Tenn.
Wells, James Hubbard	Mass.	B.S. 1949, Memphis State College	
B.S. 1952, University of Massachusetts		Weldon, Albert Ross	N.Y.
Wendemer, William Aubert	D.C.	B.S. 1955, U.S. Naval Academy	
Wendell, Robert Joseph	Md.	M.S. 1944, Massachusetts Institute of Technology	
Went, Dean Vernon	D.C.	Welkes, Linda Ann	N.Y.
Well, Frederick Phillips	Va.	A.B. 1952, William Smith College	
B.S. 1950, American University		Weiler, Richard Henry	R.I.
Weinberg, Allen	Pa.	A.B. 1949, A.M. 1951, Harvard University	
A.B. 1948, A.M. 1950, Temple University		Wellington, Peretz	Va.
Weinberg, Donald Hope	D.C.	A.B. in Govt. 1950, The George Washington University	
A.B. 1951, Pennsylvania State College		Wellman, Geraldine Louise	D.C.
Weinberg, Doris Lee	D.C.	Wells, Alice Susan	Va.
Weinberg, Dorothe Rigby	N.Y.	B.S. 1949, University of Virginia	
Weinberg, Raymond Morton	Md.	Wells, Ellwood Cecil	Ohio
Weiner, Jacob Murray	Md.	Wells, Henry Dawson, Jr.	Mo.
Weintraub, Leonard Irving	Md.	A.B. 1951, Southern Methodist University	
Weingrad, Richard Herbert	N.J.	Wells, John Emilius	Fla.
B.S. 1956, The George Washington University	D.C.	Wells, Joseph Clinton	Va.
Weinmann, Camilla Marvin	D.C.	Wellwood, Robert Edward	N.J.
Weinreb, Neil Michael	Md.	A.B. 1950, Columbia University	
Weinstein, Lee Wallace	Ohio	Welsh, Alma Roland	D.C.
Weinstein, Arlyn	D.C.	Welsh, Dorothy Anne	D.C.
A.B. 1950, Syracuse University		A.B. 1955, Radcliffe College	
Weinstein, Burton Marvin	N.Y.	Welsh, John Albert	D.C.
A.B. 1950, Syracuse University		Welsh, John McVaneaux	Va.
Weinstein, Samuel	N.J.	Welsh, Mary Kathleen	Va.
Weinstein, Leo	D.C.		
Wet, Robert Moffett	Ill.		
Weisbach, Robert Frank			
M.Mus. 1953, Manhattan School of Music			

Wishans, Freeland Gardner	W.Va.	Wheeler, Margaret Sterne	D.C.
A.B. 1937, Shepherd College		Wheeler, Richard Allen	D.C.
A.M. in Ed. 1951, The George Washington University		A.B. 1951, Yale University	Md.
Wenger, Charlotte Anne	D.C.	Wheeler, Thomas Ellis	D.C.
Wensel, Henry Theodore, Jr.	D.C.	B.S. 1949, Mount St. Mary's College	Va.
A.B. 1947, St. Johns College	Pa.	Wheeling, Joan Hartley	Va.
Wenzel, Charles Edson	D.C.	Wheelock, Kenneth Ervin	D.C.
Westbow, Farrell Ray		Whelpley, George Joseph	Va.
B.S. 1951, The George Washington University	Md.	Whilden, Walter Homa, Jr.	D.C.
Werner, George Henry		Whima, Anita Marie	
B.M.E. 1940, The George Washington University	Kans.	Whitaker, Doris Alleen	N.M.
Werner, Verena Marie	D.C.	A.B. 1945, Southern Methodist University	
Werth, Melanie Miriam	Md.	White, Carl David	
Werth, Michael Wolf		A.B. 1950, A.M. 1951, University of New Mexico	Va.
B.S. in E.E. 1948, Illinois Institute of Technology	Ohio	White, Charles Adams	N.Y.
Wertz, Alice Dianne	Ohio	White, Charles R.	D.C.
A.B. 1954, Radcliffe College		White, Dorothy Etta	Fla.
Wertz, Charles Robert		White, Edwin Borden, Jr.	Md.
B.S. 1952, Ohio State University		A.B. 1944, Emory University	Tenn.
Westberger, Mary J.	D.C.	White, Ernest Leroy	
Westmann, Jeannette L.	D.C.	White, Foster Lee	
Wesley, Carl, Jr.	Va.	B.S. 1940, Oklahoma University	W.Va.
Wesley, Mary Ann	D.C.	M.S. 1949, Tulsa University	Va.
West, Alice Amanda III	Va.	Ph.D. 1952, Oklahoma University	Md.
A.B. 1947, University of Arizona		White, Frances Lanier	N.C.
West, Barbara Jean	D.C.	White, Frances Rachel Parker	Va.
A.B. 1952, Connecticut College		White, George Erhardt	D.C.
West, Charles Allen	D.C.	White, James Wilson	D.C.
West, Delbert Junior	Ohio	White, Jane Bethel	
A.B. 1951, Wilmington College	England	White, Jane E.	
West, Donald Joseph	Md.	White, John Bridgers	Va.
West, Ernest Paul	Va.	A.B. 1946, Harvard University	D.C.
West, George William	Md.	White, Joseph Charles	
West, Irene Ethel	Va.	White, Laurence Allen	
B.S. 1951, University of Oklahoma		White, Marjorie Evelyn	Md.
West, Norman Ariel	D.C.	A.B. 1940, University of Maryland	Ala.
A.B. 1949, University of Richmond	Va.	White, Mary Stokes	Mass.
West, Sharlie Margery	D.C.	White, Patrick Thomas	
Westbrook, William Hughes	Va.	B.S. 1948, Georgetown University	Va.
A.B. in Ed. 1952, The George Washington University		White, Robert Francis	
Westcott, Raymond Arthur	Va.	B.S. 1951, Northeastern University	
Wester, Robert Melvin	D.C.	White, Robert McKay	Va.
Westerman, Evan Davies	N.Y.	B.S. 1950, Albright College	Ill.
A.B. 1949, Harvard University		White, Robert Milton	W.Va.
Westermann, Harland Walter	Va.	White, Suzanne	W.Va.
A.B. 1950, The George Washington University		Whiteagle, Madeleine Karon	Md.
Westfelt, Inga Karen Anna	D.C.	Whiteagle, Mary Agnes	Mich.
Westlake, William Arthur	Va.	Whitehead, Lorimer Edward	Va.
B.S. in M.E. 1947, Princeton University		Whitehead, Richard Earl	D.C.
Westrafer, Joyce Ann	Va.	Whiteley, Audrey Bathko	Va.
Wetherbee, Pauland Henry	Md.	Whitcomb, Daniel Newton	
Wetherill, Margaret Clark	D.C.	Whitescarver, Kenneth Tyree, Jr.	Mass.
Wexler, Daniel David	D.C.	A.B. 1942, Hardin-Simmons University	D.C.
Whale, Arthur Richard	Va.	Whitesell, William Abram	Va.
B.S. 1945, Northwestern University		Whiteside, John Clinton	Md.
Whalen, Janet Patricia	Md.	Whitfield, Charles Bristol	N.J.
Wharton, Peggy Ann	Va.	Whitfield, George	D.C.
Wheeler, Carlos Victor	Md.	Whitlock, Charles Barton	Nev.
B.S. in M.E. 1953, Case Institute of Technology		Whitlock, Elmer William, Jr.	Md.
Wheeler, Elizabeth Danner	Md.	Whitmore, Daniel Norman	
A.B. 1951, Western Reserve University		Whitmore, Ellen Christine	W.Va.
Wheeler, Jean Eileen	Md.	A.B. in Ed. 1948, Mary Washington College	D.C.
Wheeler, John Dixon, Jr.	Va.	Whitmore, Nadine Carpenter	D.C.
Wheeler, Marcia Parker	Va.	Whitney, Molly Edith	
		Whitney, Scott Cameron	Va.
		A.B. 1940, University of Nevada	Fla.
		L.L.B. 1952, Harvard University	
		Whitsett, Virginia Marie	
		Whittaker, Denis Alfred	

Students Registered

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Whittemore, Nancy A.B. 1952, Antioch College	D.C.	Williams, Elmer Wilson	Va.
Whitten, Clyde Hearne A.B. 1917, University of Alabama	Ga.	Williams, Flora Rhea	Ark.
Whittington, Helen Vierling A.M. 1948, University of Houston		Williams, Frances Pike	D.C.
Whittle, Ransom Alban A.B. 1949, Columbia University	Md.	Williams, Gerald Lester	Wash.
Whitworth, Donald Phillip M.C.S. 1951, Columbus University	Wyo.	Williams, Harold Tyson	Fla.
Whyte, Frank Aubrey A.B. 1942, Brown University	Va.	Williams, James Chris	D.C.
Wiebels, Gerard Francis A.B. 1952, University of Colorado	D.C.	Williams, James Tilden	Va.
Wichert, Howard Charles A.B. 1949, Lehigh University		Williams, Jane	Md.
Wickline, Harry F. A.B. 1941, University of Texas	Va.	Williams, Jay Wheldon	Pa.
Wicker, Donald Wallis B.S. in Ed. 1951, Longwood College	Md.	Williams, John Alexander	D.C.
Wideman, Patricia Holmes A.B. 1952, University of Colorado	D.C.	Williams, John Lewis	Va.
Wiebenson, Carla Ann A.B. 1949, Lehigh University	D.C.	Williams, John Oliver	Va.
Wielkiewicz, Rose Marie A.B. 1949, Lehigh University	Pa.	Williams, Kathryn Anne	Pa.
Wiener, Robert L. A.B. 1941, University of Texas		B.S. 1951, University of Pittsburgh	
Wiener, Rosa Dahl A.B. 1941, University of Texas		Williams, Lillian Catherine	Md.
Wier, Richard Austin B.S. in Ed. 1951, Longwood College		Williams, Margarita Beatriz	Md.
Wiggins, Janet Margaret A.B. 1949, Lehigh University		University of Cambridge, England	
Wight, Ananna Randolph A.B. 1949, Lehigh University		Williams, Mary Lee	Md.
Wiggen, Lloyd Esham A.B. 1949, Lehigh University		B.S. 1953, East Tennessee State College	
Wilansky, Donald Mark A.B. 1949, Lehigh University		Williams, Mary Moana-Lani	Hawaii
Wilcox, Dorothy Mae A.B. 1949, Lehigh University		Williams, Milton	Pa.
Wilcox, Maxwell Richmond A.B. 1949, Lehigh University		B.S. in Chem. 1951, Philadelphia College	
Wilcox, Anson Freeman A.B. 1949, Lehigh University		of Pharmacy and Science	
Wiles, Mary A.B. 1949, Lehigh University		Williams, Neal Earl Jr.	N.D.
Wiles, Carolyn Christensen A.B. 1949, Lehigh University		B.S. 1949, U.S. Coast Guard Academy	
Wiles, Margaret A.B. 1949, Lehigh University		Williams, Paula Marylyn	D.C.
Wiles, Robert Lynn, Jr. A.B. 1949, Lehigh University		Williams, Raymon Albin	Va.
Wilderburg, Albertus Cornelius A.B. 1949, Lehigh University		B.S. 1949, Lyndeburg College	
Wilder, Daniel William A.B. 1949, Lehigh University		Williams, Richard Edward	Pa.
Wiles, Leila Marie A.B. 1949, Lehigh University		Williams, Richard Charles	D.C.
Wiley, Myra Ellen A.B. 1949, Lehigh University		B.S. 1949, U.S. Military Academy	
Willems, Harry Wesley A.B. 1949, Lehigh University		B.S. 1949, U.S. Military Academy	
Willems, Helen B. A.B. 1949, Lehigh University		M.S. 1950, University of Illinois	
Willems, Charles Latimer A.B. 1949, Lehigh University		Williams, Robert Edwin	D.C.
Willems, James Claiborne, Jr. A.B. 1949, Lehigh University		Williams, Thomas Elbert, Jr.	Md.
Willems, John Daniel A.B. 1949, Lehigh University		Williams, Walter David	Ill.
Willems, David Edward Burnell A.B. 1949, Lehigh University		B.S.C. 1949, Ohio University	
Wilkinson, Dorothy Larson A.B. 1949, Lehigh University		Williamson, Florence Raymond	Va.
Wilkinson, John Hartley A.B. 1949, Lehigh University		B.S. 1952, Ball State Teachers College	
Wilkinson, Mary Margaret A.B. 1949, Lehigh University		Williamson, John H.	D.C.
Wilcox, Ralph Creighton A.B. 1949, Lehigh University		B.S. 1949, New Haven State Teachers	
Williams, Ann Elizabeth A.B. 1949, Lehigh University		College	
Williams, Ann Morgan A.B. 1949, Lehigh University		A.M. 1948, Columbia University	
Williams, Barbara Joyce A.B. 1949, Lehigh University		Williamson, O'Dell Clinton	W.Va.
Williams, Donald Bowers A.B. 1949, Lehigh University		Wiles, Lillian Esther	D.C.
Williams, Earl Jr. A.B. 1949, Lehigh University		Williamson, Harry E. Jr.	Va.
Williams, Eleanore Andrews A.B. 1949, Lehigh University		B.S. in B.A. 1950, University of	
Williams, Elma A.B. 1949, Lehigh University		Roanoke	
		Wills, Edward Allen, Jr.	Va.
		Wills, Helen Jeanne Zeller	D.C.
		Wills, Robert Edward	D.C.
		Wills, William Jay	Ark.
		Wills, Nancy Sue	Va.
		Wills, Joseph B.	Md.
		Wills, Robert Walter	W.Va.
		B.S. in M.E. 1951, West Virginia	
		University	
		Willson, Percy H. H.	Va.
		Willson, Anne Norman	Md.
		Willson, Anson Theodore	W.Va.
		Willson, Benjamin James	Md.
		A.B. 1943, M.S. 1947, West Virginia	
		University	
		Willson, Charles Henry	Va.
		B.S. 1950, Virginia Polytechnic Institute	
		Wilson, Dale Branch	D.C.
		Wilson, Daniel Marvin	N.C.
		Wilson, Diane Conner	Va.
		Wilson, Francis Jerome	Md.
		A.B. 1951, Upstate College	
		Wilson, Frank Wesley	Va.
		Wilson, Frederick Eugene	Ill.
		Wilson, Henry Randolph	Maine
		B.S. 1946, U.S. Naval Academy	

Wilson, Howard Eugene	Va.	Witham, Irma Marie	Nebr.
Wilson, Jack Herbert	Colo.	Witham, Robert Carey	D.C.
A.B. 1930, University of Oklahoma		A.B. in Govt. 1950, The George Washington University	D.C.
Wilson, James Bruce	Va.	Witkin, Lloyd Benjamin	
Wilson, James Henderson	D.C.	B.S. 1940, Louisiana Polytechnic Institute	
Wilson, James Howie	Md.	M.S. 1951, The George Washington University	D.C.
A.B. 1930, The George Washington University		Wittman, George Eugene	Md.
Wilson, James Roy	N.C.	Wittman, George Eugene	D.C.
B.S. 1949, University of North Carolina		Wobbeking, Sondra Lee	
Wilson, Jane King	Vt.	Wodinsky, Isidore	
B.S. 1952, University of Vermont		A.B. 1939, Brooklyn College	
Wilson, John Vernon	S.C.	M.S. 1951, The George Washington University	D.C.
B.S. 1940, U.S. Naval Academy		Wofford, Leon Daniel, Jr.	
M.S. 1948, University of California at Los Angeles		B.S. in C.E. 1952, University of Texas	N.Y.
Wilson, Leo Earl	Md.	Wohl, Paul	Md.
B.S. in E.E. 1948, Carnegie Institute of Technology		Wohlert, Chester Glenn	
Wilson, Lorna Ruth	Colo.	Wohlgemuth, Thomas Joseph	N.J.
Wilson, Margaret Alice	Pa.	A.B. 1950, Loyola College	Md.
Wilson, Raymond Boyd	Nebr.	Wojtowicz, Jan, Jr.	N.J.
Wilson, Thomas Edwin	Ill.	Wolf, Barbara Cohen	D.C.
B.S. 1952, University of Illinois		Wolf, Frank George	D.C.
Wilson, Victor Carl	D.C.	Wolf, Gustave William	Pa.
Wilson, William Howard	D.C.	Wolf, Herbert Maurice	
Wimberly, Jewel	D.C.	Wolf, Richard Marvin	
B.S. 1944, Louisiana State Normal School, Natchitoches		Wolf, Ronald Wenger	D.C.
Winans, Julia Adelaide	D.C.	A.B. 1951, Lebanon Valley College	
Wandeker, Louis Edwin	N.J.	Wolf, Wesley Gene	D.C.
Wander, Vermona Devlin	N.C.	B.S. 1949, U.S. Merchant Marine Academy	
Wander, William Tucker	D.C.	Wolfe, Zev Leopold	D.C.
Wingfield, Einar	Va.	B.S. 1951, Northwestern University	D.C.
A.B. 1949, North Dakota State Teachers College, Minot		Wolfe, Allen Robert	Va.
Wine, Platte Chin	Nebr.	Wolfe, Burton Harold	
Wineberg, Harvey Seymour	Ill.	Wolfe, Mary Lee	N.J.
A.B. 1952, University of Wisconsin		B.S. in Ed. 1947, A.M. 1949, West Virginia University	Va.
Winograd, Gilda Joyce	D.C.	Wolkamp, William, Jr.	D.C.
Wiser, Dorothy Gail	D.C.	Wolke, Earl Scott	D.C.
Winfrey, Frances Kathleen	D.C.	B.S. 1952, Brigham Young University	D.C.
Winger, Audrey D.	Wis.	Wolton, Alfred Joseph	D.C.
A.B. 1941, University of Wisconsin		Wolton, Barbara Elaine	Pa.
Winger, Leta Grace	D.C.	Wolk, Martin	
Wingo, James Scott	D.C.	Wolkeau, Jacob Alfred	N.Y.
Wingo, Maura Clare	D.C.	A.B. 1941, University of Pennsylvania	
Winkler, Ann Madeleine	D.C.	Wolman, Harold	D.C.
Winkler, Don Clinton	Calif.	B.S. 1942, College of the City of New York	Pa.
Winkler, Lawrence	Va.	Wolpoff, Stanley Gilbert	D.C.
B.S. 1952, Washington University		Womble, William Lonsden	Calif.
Winn, Deandra Northrup	Md.	B.S. 1951, Duke University	China
A.B. 1951, Smith College		Wong, Hon Ping	D.C.
Winn, Jane McConnell	D.C.	Wong, James K.	
Winn, Karen	D.C.	Wong, Wai Hong	
Winkow, Edward Columbus, Jr.	Md.	Wood, Charles Rexant	Md.
Winkow, Joanne Patricia	Va.	B.S. 1951, American University	Va.
Winkow, Warren Judson	Va.	Wood, Gloria M.	
A.B. 1950, University of Richmond		Wood, Harry Eugene	D.C.
Winston, Anne Marie	D.C.	LL.B. 1942, The George Washington University	Va.
Winters, John Francis	D.C.	Wood, James Buchanan	D.C.
Wita, John Hage	Md.	Wood, James Henry, Jr.	
B.S. 1950, Mount St. Mary's College		Wood, Julia Burton	
Wise, John Phillip	Texas	A.B. in Ed. 1952, The George Washington University	
Wiseman, Kate Smith	Ark.		
B.S. 1914, University of Arkansas			
Wiseman, Larry Ray	Ill.		
Wiseman, Mabel Walker	Tenn.		
Wisland, Roy Henry	Pa.		
Wisner, Carl Edward, Jr.	Va.		
Wisner, Joan Kay	D.C.		
Witham, Anthony Patrick	N.J.		

Wood, Mary Bivins Meyer A.B. 1941, Wesleyan College	Va.	Wright, Elizabeth Truman A.B. 1939, Assenheny College	Va.
Wood, Priscilla Winslow	D.C.	Wright, Fannie Anna	D.C.
Wood, Quentin Howard L.L.B. 1940, Boston University	Mich.	Wright, George Franklin	Ohio
L.L.M. 1950, Northwestern University		Wright, George Rawley A.B. 1931, Washington College	D.C.
Wood, Robert Ambrose A.B. 1948, The George Washington University	Va.	Wright, Howard John B.S. in M.E. 1951, University of Wisconsin	Wis.
Wood, Rufon Kent	Utah	Wright, John Grant B.B.A. 1942, Southern Methodist University	Va.
Wood, Thomas J. B.S. 1940, Texas State College	Texas	Wright, Leach Richard A.B. 1930, Middlebury College	Vt.
Wood, Walter Henderson	Texas	A.M. 1934, University of New Hampshire	
Wood, Wilton Henry B.S. 1942, Emmanuel-Missionary College	Md.	Wright, Mabel Augusta	D.C.
A.M. 1948, University of Maryland		Wright, Nancy Barrow A.B. 1931, Radcliffe College	Va.
Woodard, Carl Hassell B.S. 1940, North Carolina State Teachers College	Va.	Wright, Peter	Va.
Woodcock, Carlton Alton	D.C.	Wulf, James Theodore	Calif.
Woodhead, Evelyn Mary		Wulf, Pearl Elizabeth B.S. in H.E. 1932, The George Washington University	Va.
Woodhull, Patricia A.B. 1951, Tufts College	Md.	Wunder, Edward Joseph, Jr. B.S. 1948, University of Maryland	D.C.
M.S. 1954, University of Michigan		Wyatt, Benjamin Robert, Jr. A.B. 1942, Harvard University	R.I.
Woods, David William B.S. 1942, U. S. Coast Guard Academy	N.Y.	Wyatt, John Walton B.S. in Ed. 1948, Alabama State Teachers College, Troy	Fla.
Woodson, Joseph Bernd B.S. 1944, Swarthmore College	D.C.	Wyatt, Thomas Frederick	D.C.
Woodward, Hilda Grey	D.C.	Wydro, John William	Ohio
Woodward, Virginia Cooke A.B. 1935, Bryn Mawr College		Wwener, Robert Lee	N.Y.
Woods, Bernard Duke	Fla.	Wyle, John Worthington	D.C.
Woolf, Ronald Herman, Jr.	Va.	Wyman, Charles Malcolm	Mass.
Woolf, Bertie Harold Reginald	D.C.	Wyne, William Howard	I.C.
Woolford, John M. C.E. 1936, University of Cincinnati B.S. in Ed. 1944, A.M. 1944, Miami University	Md.	Wysock, Raymond Eugene	Md.
Woolfson, Irwin P. B.S. 1952, Rutgers University	N.J.	Wyson, Hazel Gailen A.B. 1948, Greenville State College	W.Va.
Worley, Doris Estes		Wyson, William Smith A.B. 1941, Maryland College	W.Va.
Worley, Ruth Conant Worley, James A.B. 1934, Virginia Military Institute	D.C.	Wyvill, Mildred Ellen	D.C.
Worsh, Lester Anthony	Va.	Wyvill, John Christopher	D.C.
Worsh, Herbert Warren			X
Worsh, Jerry Donald	Ark.	Xenos, Marcia Roessing	Va.
Worsh, George Samuel A.B. 1951, L.L.B. 1954, The George Washington University	Md.		Y
Worsh, Barbara Anne		Yablon, Harold	D.C.
Worsh, Charles Drown	D.C.	Yager, Emily	D.C.
Worsh, Joseph Francis	D.C.	Yager, Elizabeth Ann	Va.
Worsh, Samuel Joseph, Jr. A.B. 1944, University of Richmond	D.C.	Yager, Helene Casson Licence de Lettres 1944, University of Toulouse, France	Md.
Worsh, Harry Gaines	Va.	Yager, Helen Veronica	Pa.
Worsh, Marion L.	Fla.	Yager, Helen Houston DeFrees	D.C.
Worsh, Kay Jay	D.C.	Yakow, Andrew Joseph	Pa.
Worsh, William Neal B.S. 1939, University of Maryland	N.J.	Yancy, Henry E.	D.C.
Worsh, William Richard B.S. 1944, Hays Point College	D.C.	Yam, Chas. Seng A.B. 1945, Northwest Associated University, Clifton	D.C.
Wright, Barton B.S. 1947, M.S. 1949, University of Washington	Va.	A.M. 1948, University of Michigan	
Wright, Dale Ann B.S. 1948, Carnegie Institute of Technology	Va.	Yarrowitz, Gilbert Herbert B.S. 1952, College of the City of New York	D.C.
L.L.B. 1952, The George Washington University	Pa.	Yarrowitz, Charles Robert	Va.
		Yasutani, Kambis	Texas
		Yates, Edgar, Jr.	D.C.
		Yates, Harvey Atwell	Md.
		Yates, John Russell, Jr. A.B. 1952, Randolph-Macon College	

Yates, Margaret Anne MacDonald	Va	Yount, Isabelle Henkel	Va
Yates, Vernon Wesley	Ill.	B.S. 1930, Wilson Teachers College	Va
Yates, Virginia Henderson	S.C.	Yount, Margaret Reybold	D.C.
A.B. 1936, Georgia State College		Youssef, Ahmed Mahmoud	D.C.
A.B. in L.S. 1938, Emory University		B.S. in Eng. 1950, Cairo University	D.C.
Yates, William Avery, Jr.	Va	Youssef, Moustafa Kamel	China
Yazel, Mohamed Makram	D.C.	Yu, Betty	D.C.
Yazel, Richard Alan	Md	Yu, David, Jr.	China
Yazge, Irene Elizabeth	D.C.	Yu, I-Yuen	D.C.
Yazigi, Alberto Saleman	D.C.	A.B. 1942, National Wuhara University	D.C.
Yeager, Gloria Alberta	D.C.	China	China
Yeager, Philip Brand	Va	Yu, Yang-Ho	D.C.
A.B. 1930, University of Arizona		Yuddin, William Morris	Con
Yednock, Esther Mary	D.C.	A.B., A.M. 1952, University of Michigan	N.J.
Yednock, John Joseph	D.C.	Yuhua, Olga	Japan
B.S. 1952, The George Washington		Yumoto, Sadako	D.C.
University		Yurou, John Jesse	
Yee, Ernest Goo Sing	Ohio	A.B. 1953, The George Washington	D.C.
Yee, Frederick Warren	Calif.	University	Pa.
Yen, Helen Chiang-Ying	D.C.	Yurou, Victor Roy	
B.S. 1942, Franco-Chinese University		Yut, Joseph Peter	
B.S. 1950, Ohio State University			
Yeakum, Celine Marie	W Va		
Yobst, Vivian Marie	D.C.		
B.S. 1944, The George Washington			
University			
Yoder, Paul Timothy	Del		
B.S. 1950, Eastern Mennonite College			
Yodini, Chuavong	Thailand		
York, Edgar Duane	Md		
York, Emil Conrad	Va		
York, Robert Lamar	D.C.		
Yorkshire, Alan Hunter	D.C.		
Yoshioka, Pauline A.	D.C.		
Yost, Lenna Lee	Va		
Young, Charles Edward	Va		
Young, Francis Wayland	Ala.		
B.S. in M.E. 1950, University			
of Alabama			
Young, Fred Farmer, Jr.	Mass.		
Young, George Wesley, Jr.	Md		
Young, George Yuen	D.C.		
Young, Gwendolyn Farmer	N.Y.		
A.B. 1914, Northwestern University			
Young, James Sterling	Ga.		
A.B. 1954, Princeton University			
Young, Knermine Hubson	Va		
Young, Marguerite Gattlin	Md.		
A.B. 1948, Randolph-Macon Woman's			
College			
Young, Marguerite Louise	Md		
A.B. 1943, A.M. 1943, University			
of Wisconsin			
Young, Marilyn June	Ohio		
A.B. 1950, Ohio State University			
Young, Mary Catherine	Okl.		
Young, Ray Hadley	Calif.		
Young, Richard David	Va		
Young, Robert Norman	D.C.		
Young, Robert Stanley	D.C.		
A.B. 1951, The George Washington			
University			
Young, Vernon Cole	Utah		
Young, William Karl, Jr.	Va		
Young, William Mitchell	D.C.		
Yost, Edward	N.J.		
A.B. 1950, The George Washington			
University			
Youngs, Joseph Patrick, Jr.	D.C.		
A.B. 1947, University of Miami			
Youngs, Linda Adel	Va		
Younker, Leura	Md		

Students Registered

581

Zietz, Eli B.S. in Ed. 1951, University of Nebraska	Md.	Zoranski, Henry Julius	Pa.
Zietz, Theodore M.S. in Ed. 1940, College of the City of New York	D.C.	Zoyras, Nicholas Louis B.S. 1953, Georgetown University	D.C.
Zikria, Bashir Ahmad	Alghanistan	Zubic, Donald Michael	D.C.
Zimmerman, Harry Chalfant A.B. in Govt. 1951, The George Washington University	Va.	Zubowit, Peter B.S. in Ed. 1940, Pennsylvania State Teachers College, Shippensburg	Pa.
Zimmerman, Julian Norman	D.C.	Zuckerman, Edwin Jules	D.C.
Zimmerman, Sister Mary Mathias	D.C.	Zuckerman, Seymour B. A.B. 1941, New York University	N.Y.
Zimmerman, Peggie J.	Pa.	Zudin, Aleksei Aleksandrovich	D.C.
Zimmerman, Robert Gehr	D.C.	Zuendel, Carl Sherman	Pa.
Zimmerman, Robert Thompson B.S. 1932, Westminster College	Md.	Zugel, Mary Jean A.B. 1951, The George Washington University	Md.
Zink, Robert Lee M.S. 1937, University of Pittsburgh		Zukunft, Ellen Jorgine	Maine
Zinn, Donald Edward B.S. 1954, Pennsylvania State College	Ga. Pa.	A.B. 1948, Boston University Ed. M. 1950, University of South Carolina	
Zinner, Celia Rae	Iowa	Zumner, Anthony Simon	Ill.
Zippay, Albert Roy	Pa.	B.S. in M.E. 1950, Purdue University	
Zlotek, Lucille A.	Ohio	Zumoff, Bertram	D.C.
Zoranski, Howard Francis	Conn.	Zuslo, Joannette Marie	D.C.
Zoch, Richmond Tucker B.S. 1950, University of Maryland A.B. 1941, A.M. 1933, The George Washington University	Md.	Zweibel, Sidney A. A.B. 1940, The George Washington University	N.Y.
Zoda, Grace Teresa		Zyblut, Chester Anthony	Ill.
Zolyak, John A.B. 1953, The George Washington University	Va. Pa.	A.B. 1950, De Paul University LL.B. 1952, The George Washington University	
Zondag, Cornelius Henry LL.B. 1938, J.D. 1940, University of Leyden, The Netherlands A.M. 1940, New York University	D.C.		

SUMMARY OF REGISTRATION

1953-54

THE JUNIOR COLLEGE

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Freshmen	544	481	1,025
Sophomores	526	444	970
Total	1,070	925	1,995

COLUMBIAN COLLEGE

Juniors	134	132	266
Seniors	278	209	487
Candidates for the degree of Master of Arts	266	163	429
Candidates for the degree of Master of Science	97	1	98
Unclassified	11	8	19
Total	786	513	1,299

THE GRADUATE COUNCIL

Candidates for the degree of Doctor of Philosophy ..	139	29	168

THE SCHOOL OF MEDICINE

First Year	94	6	100
Second Year	87	3	90
Third Year	80	1	81
Fourth Year	77	1	78
Total	338	11	349

THE LAW SCHOOL

First Year	585	36	621
Second Year	248	7	255
Third Year	168	7	175
Candidates for the degree of Master of Laws	89	1	90
Candidates for the degree of Master of Comparative Law	7	..	7
Candidates for the degree of Master of Comparative Law (American Practice)	17	..	17
Candidates for the degree of Doctor of Juridical Science	12	..	12
Unclassified	47	3	50
Total	1,173	54	1,227

THE SCHOOL OF ENGINEERING

	Men	Women	Total
Freshmen	213	2	215
Sophomores	124	1	125
Juniors	101	2	103
Seniors	137	..	137
Candidates for the degree of Master of Science	24	..	24
Unclassified	25	..	25
Total	624	5	629

SCHOOL OF PHARMACY

	Men	Women	Total
Juniors	14	2	16
Seniors	28	6	34
Unclassified	1	..	1
Total	43	8	51

THE SCHOOL OF EDUCATION

	Men	Women	Total
Juniors	13	44	57
Seniors	38	63	101
Candidates for the degree of Master of Arts	125	158	283
Candidates for the degree of Doctor of Education ..	59	29	88
Unclassified	9	2	11
Total	244	296	540

THE SCHOOL OF GOVERNMENT

	Men	Women	Total
Juniors	102	30	132
Seniors	205	27	232
Candidates for the degree of Master of Arts	210	41	251
Candidates for the degree of Master of Business Administration	40	..	40
Candidates for the degree of Master of Personnel Administration	2	..	2
Candidates for the degree of Doctor of Business Administration	14	1	15
Unclassified	7	3	10
Total	580	102	682

THE DIVISION OF UNIVERSITY STUDENTS

	Men	Women	Total
University Students	2,081	1,375	3,456

THE DIVISION OF SPECIAL STUDENTS

	Men	Women	Total
Special Students	669	207	876

THE COLLEGE OF GENERAL STUDIES
(On Campus)

	Men	Women	Total
College of General Studies	13	1	14

SUMMARY

	Men	Women	Total
Students Registered, Academic Year 1953-54	11,751	5,024	16,775
Students Registered, Summer Sessions 1953	2,348	898	3,246
Total Registration 1953-54	14,099	5,922	20,021
Duplicate Registrations	6,346	2,389	8,735
Total Number of Students Registered 1953-54*	7,753	3,533	11,286

TEACHING STAFF 1953-54

Professors Emeritus	21
Professors	97
Research Professors	1
Adjunct Professors	10
Professorial Lecturers	44
Clinical Professors	18
Adjunct Clinical Professors	7
Associate Professors	57
Associate Clinical Professors	9
Associates in the School of Medicine	85
Assistant Professors	49
Assistant Research Professors	6
Lecturers	82
Instructors	20
Clinical Instructors	155
Research Associates	2
Associates	46
Fellows	65
Technical Assistants	14
Total	836

DEGREES CONFERRED

Associate in Arts	424
Bachelor of Arts	261
Bachelor of Arts in Education	26
Bachelor of Arts in Government	129
Bachelor of Civil Engineering	11
Bachelor of Electrical Engineering	36
Bachelor of Laws	178
Bachelor of Mechanical Engineering	11
Bachelor of Science	54
Bachelor of Science in Engineering	9
Bachelor of Science in Home Economics	9
Bachelor of Science in Pharmacy	29
Bachelor of Science in Physical Education	23
Doctor of Education	9
Doctor of Juridical Science	4

* The following figures for students registered in the Off Campus Division of the College of General Studies are not included: 3,776 men; 1,977 women; total 4,153.

Summary of Registration

585

Doctor of Medicine.....	78
Doctor of Philosophy.....	18
Juris Doctor.....	33
Master of Arts.....	57
Master of Arts in Education.....	65
Master of Arts in Government.....	15
Master of Arts in Personnel Administration.....	4
Master of Arts in Public Administration.....	10
Master of Business Administration.....	29
Master of Comparative Law.....	6
Master of Comparative Law (American Practice).....	10
Master of Laws.....	28
Master of Science.....	28

1,594

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

UNITED STATES, TERRITORIES, AND POSSESSIONS

Alabama.....	58	New Hampshire.....	30
Arizona.....	16	New Jersey.....	183
Arkansas.....	25	New Mexico.....	18
California.....	172	New York.....	519
Colorado.....	31	North Carolina.....	88
Connecticut.....	77	North Dakota.....	12
Delaware.....	13	Ohio.....	150
District of Columbia.....	3,638	Oklahoma.....	36
Florida.....	125	Oregon.....	19
Georgia.....	45	Pennsylvania.....	489
Idaho.....	30	Rhode Island.....	35
Illinois.....	148	South Carolina.....	34
Indiana.....	52	South Dakota.....	18
Iowa.....	50	Tennessee.....	58
Kansas.....	45	Texas.....	75
Kentucky.....	37	Utah.....	38
Louisiana.....	17	Vermont.....	11
Maine.....	33	Virginia.....	2,216
Maryland.....	1,775	Washington.....	40
Massachusetts.....	170	West Virginia.....	122
Michigan.....	83	Wisconsin.....	50
Minnesota.....	54	Wyoming.....	2
Mississippi.....	22	Alaska.....	4
Missouri.....	83	Guam.....	1
Montana.....	17	Hawaii.....	21
Nebraska.....	35	Okinawa.....	2
Nevada.....	9	Puerto Rico.....	16

FOREIGN COUNTRIES

Afghanistan.....	2	Brazil.....	7
Argentina.....	1	British West Indies.....	1
Austria.....	1	Burma.....	1
Belgium.....	1	Canada.....	6
Bolivia.....	1	China.....	7

Colombia	5	Italy	1
Costa Rica	2	Japan	8
Cuba	2	Korea	0
Denmark	3	Lebanon	1
Ecuador	1	Malaya	2
Egypt	4	Mexico	1
England	1	Nepal	2
Finland	2	Netherlands	3
France	2	Norway	1
Germany	3	Pakistan	1
Greece	6	Panama	4
Guatemala	2	Peru	5
Honduras	3	Philippines	1
Hong Kong	1	South Africa, Union of	2
India	10	Sweden	1
Indo-China	1	Syria	3
Indonesia	1	Thailand	3
Iran	4	Turkey	4
Iraq	4	Venezuela	2
Israel	1	Yugoslavia	

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objects of this Association are to unite the graduates in closer sympathy and to promote the general welfare of the University. The following persons are eligible for *active* membership: graduates of any college, school, or division of the University; holders of honorary degrees from the University; and members of the Board of Trustees and of the Faculty of the University. Any person who has matriculated, who has been in regular attendance for one year, and who has left the University in good standing, is eligible for *associate* membership.

The Alumni Office is situated at 2018 I Street, Washington, D. C. Alumni are urged to keep the office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

1954-55

President.—Stanley James Tracy, LL.B. 1925; 4800 College Avenue, College Park, Md.

Vice Presidents:

Columbian College.—James Robert Kirkland, A.B. 1927, LL.B. 1928, LL.M. 1929 (B.C.S. 1931, Benjamin Franklin University); 1519 Underwood Street, Washington, D. C.

Graduate Council.—Joseph Hiram Roe, Ph.D. 1923 (A.B. 1916, Roanoke College; A.M. 1917, Princeton University; Ph.D. 1934, Yale University); 1352 Jefferson Street, Washington, D. C.

School of Medicine.—Luther Henry Snyder, M.D. 1935; 3640 Everett Street, Washington, D. C.

Law School.—Horace Luther Lohnes, LL.B. 1924, LL.M. 1925 (M.P.S. 1927, American University); Munsey Building Washington, D. C.

School of Engineering.—Merwyn Newell McKnight, Sr., B.S. in M.E. 1938, B.E.E. 1941; 1704 Calvert Street, Arlington, Va.

School of Pharmacy.—F. Royce Franzoni, B.S. in Phar. 1936; 3508 N. Abingdon Street, Arlington, Va.

School of Education.—Elsie Green, A.B. 1914, A.M. 1928; 3151 Tennyson Street, Washington, D. C.

School of Government.—Otto Schoenfelder, A.B. in Govt. 1933, LL.B. 1942; Tax Court of the United States, Washington, D. C.

Treasurer.—Anna Marie Bischoff, A.B. 1928; 2025 I Street, Washington, D. C.

Executive Secretary.—Mary Dow, A.B. 1953; 4734 N. 20th Street, Arlington, Va.

Executive Committee:

Alfred Emanuel Brigulio, M.D. 1936; 2025 I Street, Washington, D. C.

Lemuel Jackson Embrey, A.B. 1937, LL.B. 1949, LL.M. 1949; 647 22d Street S., Arlington, Va.

Reuben Francis Leatherwood, B.S. in C.E. 1933; 105 Grafton Street, Chevy Chase, Md.

Robert Eugene Newby, ex. 1926; 2706 East West Highway, Chevy Chase, Md.

Frederick August Reuter, M.D. 1916; 1835 I Street, Washington, D. C.

William Van Amberg Simmons, LL.B. 1925, A.B. 1926; Liberty National Bank, Washington, D. C.

Hillory Alfred Tolson, A.B. 1924, A.M. 1927 (LL.B. 1930, LL.M. 1931, M.P.L. 1931, National University School of Law); 5200 Sangamore Road, Washington, D. C.

James Cornelius Van Story, Jr., A.B. 1948, A.M. 1949; Wyatt Building, Washington, D. C.

THE GEORGE WASHINGTON UNIVERSITY MEDICAL SOCIETY

The George Washington University Medical Society, the organization of graduates of the School of Medicine, was established in 1905 and since 1926 has been affiliated with the General Alumni Association. The objects of the Society, as stated in the constitution, are "The promotion of the science and art of medicine and the welfare of the School of Medicine."

1954-55

President.—Leland Ernest Stevenson, M.D. 1934; 1219 16th Street, Washington, D. C.

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Council:

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- John Hugh Lyons, M.D. 1918, B.S. 1919 (M.S. 1923, University of Minnesota); 1150 Connecticut Avenue, Washington, D. C.
 Henry John Russell McNitt, B.S. in Med., M.D. 1925; 1835 I Street, Washington, D. C.
 Luther Henry Snyder, M.D. 1935 (A.B. 1931, Gettysburg College); 915 19th Street, Washington, D. C.

THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association, the organization of graduates of the Law School, was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the Law School in closer touch with one another and especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the Law School.

1954-55

- President.*—Weston Vernon, Jr., LL.B. 1929 (B.S. 1925, Utah State Agricultural College); 15 Broad Street, New York, N. Y.
First Vice President.—John Elmer McClure, LL.B. 1924, LL.M. 1925; Washington Building, Washington, D. C.
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Secretary-Treasurer.—Elizabeth Strachan Freret, LL.B. 1950 (B.B.A. 1942, Tulane University); World Center Building, Washington, D. C.
Executive Committee:
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 Samuel Craighead Caldwell, LL.B. 1943; Wyatt Building, Washington, D. C.
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 Howard Cecil Kilpatrick, LL.B. 1922; American Security Building, Washington, D. C.
 Horace Luther Lohnes LL.B. 1924, LL.M. 1925 (M.P.S. 1927, American University); Munsey Building, Washington, D. C.

Philbrick McCoy, LL.B. 1922, LL.M. 1923; The Superior Court, Los Angeles 12, Calif.

Charles Sylvanus Rhyne, LL.B. 1937; 730 Jackson Place, Washington, D. C.

Edward Lipphardt Scheufler, A.B. 1922, LL.B. 1924; 1503 Commerce Building, Kansas City, Mo.

Ex-Officio Member.—Vernon Romney, LL.B. 1922; 212-214 Kearns Building, Salt Lake City, Utah.

THE LIBRARY SCIENCE ALUMNI ASSOCIATION

The Library Science Alumni Association was organized in 1932 by graduates of the Division of Library Science and became an affiliate of the General Alumni Association in 1935. It was established to foster a closer relationship between the Faculty and graduates and to further the interests of the Division of Library Science and of the University as a whole.

1954-55

President.—Mildred Benton, A.B. in L.S. 1934; Naval Research Laboratory, Washington, D. C.

Vice President.—Helene Gingras, A.B. in L.S. 1932; Naval Observatory, Washington, D. C.

Secretary.—Clara Widger, ex. 1928; 2115 F Street, Washington, D. C.

Treasurer.—Natalie Hopper, A.B. in L.S. 1942; National Bureau of Standards, Washington, D. C.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering in closer fellowship, to promote the general welfare of the School of Engineering and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

1954-55

President.—Harry Cornelius Connor, B.S. in M.E. 1937; 4201 Sheridan Street, Hyattsville, Md.

Vice President.—James Alexander Sinsabaugh, B.M.E. 1949; 2709 S. Adams Street, Arlington, Va.

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Executive Committee:

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Merwyn Newell McKnight, Sr., B.S. in M.E. 1938, B.E.E. 1941; 1704 N. Calvert Street, Arlington, Va.

THE GEORGE WASHINGTON UNIVERSITY NURSES ASSOCIATION

The George Washington University Nurses Association was organized in 1914. In 1936 this organization was made an integral part of the General Alumni Association, and graduates of the School of Nursing were accorded associate membership. The objects of the Association are to hold in unison the graduates of the George Washington University Hospital School for Nurses, to care for its sick members, and to promote the advance of nursing in the interest of the George Washington University Hospital.

1954-55

President.—Mrs. Juanita P. Love, N. Dip. 1928; 516 Oakwood Street, Washington, D. C.

Vice President.—Laura Sandres, N. Dip. 1924; 1731 New Hampshire Avenue, Washington, D. C.

Secretary.—Flora Schroebel, N. Dip. 1929; 4730 16th Road N., Arlington, Va.

Treasurer.—Alma W. Stevens, N. Dip. 1928; 4106 Madison Street, Hyattsville, Md.

REGIONAL ALUMNI CLUBS

Regional alumni clubs sponsored by the General Alumni Association are maintained in the following places: Los Angeles, Calif.; Denver, Colo.; Atlanta, Ga.; Chicago, Ill.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; Kansas City, Mo.; Brooklyn, N. Y.; New York City, N. Y.; Cleveland, Ohio; Tulsa, Okla.; Portland, Oreg.; Pittsburgh, Pa.; Norfolk, Va.; Seattle, Wash.; Milwaukee, Wis.; Arkansas; Northern California; New Jersey; Ohio River Valley; Utah; Hawaii; Philippine Islands; Puerto Rico.

Information about the officers and activities of these clubs may be obtained from the Alumni Office of the University.

THE GRADUATE ENDOWMENT FUND

The Graduate Endowment Fund was founded by the class of 1926 with the object of providing endowment to be used for the development

of the University. Membership is limited to seniors and graduates who sign a pledge of \$100, payable annually in ten equal installments.

The pledge notes and funds are held in trust. When the principal reaches the sum of \$100,000, the Board of Administrators of the Fund may pay the University such sums as it may vote for the erection of buildings, acquisition of sites, maintenance, and purchase of equipment. At no time may money be drawn so as to leave a balance of less than \$50,000 on deposit.

On request, the Alumni Office of the University will furnish pledge blanks to alumni.

THE COLUMBIAN WOMEN

The objects of this organization are (1) the promotion of acquaintanceship among its members; (2) the advancement of women by the founding of scholarships in the various departments of the University; and (3) the promotion of the interests of the University.

MEMBERSHIP

The following persons shall be eligible for active membership: (a) any woman who for one year has been a regularly registered student in The George Washington University, provided that she shall have received credit for thirty hours of work; (b) any woman member of the Faculties or Board of Trustees, any woman on the administrative staff; the wife of any member of the Faculties, Board of Trustees, or of the administrative staff; (c) any woman recipient of an honorary degree from the University.

1954-55

President.—Elsie Green, A.B. 1914, A.M. 1928; 3151 Tennyson Street, Washington, D. C.

First Vice President.—Alice Bisselle, A.B. 1922; 4422 Q Street, Washington, D. C.

Second Vice President.—Juanita M. Winn, A.B. in Ed. 1933, A.M. 1936; 706 E Street, S. E., Washington, D. C.

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THE WOMEN'S BOARD OF THE GEORGE WASHINGTON
UNIVERSITY HOSPITAL

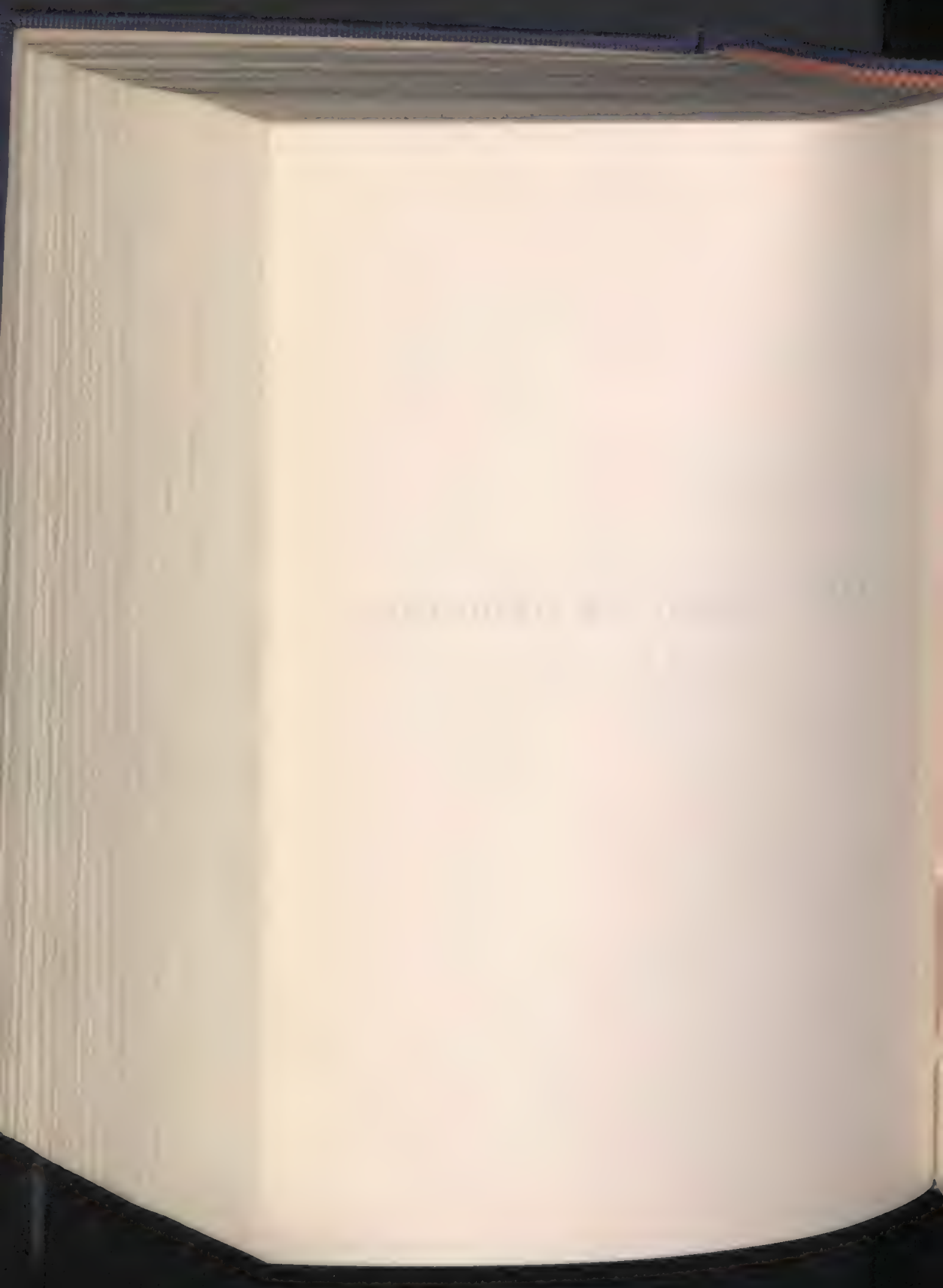
The object of this organization is to aid in every way the interests and advancement of the George Washington University Hospital. Meetings are held on the first Wednesday of each month, October to June, inclusive. Inquiries regarding membership should be addressed to the Corresponding Secretary, The George Washington University, Washington 6, D. C.

1954-55

- President.*—Mrs. Cloyd Heck Marvin
Vice President.—Mrs. Wilbur Carr
Vice President.—Mrs. Gilbert Grosvenor
Vice President.—Miss Grace Burton
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THE SCHOOL OF MEDICINE

1954-55



THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

VOL LII

No. 7

THE SCHOOL OF MEDICINE

WASHINGTON, D. C.

PUBLISHED IN SEPTEMBER
MCMLIII

BY THE UNIVERSITY

THE
HISTORY
OF THE
CITY OF
NEW YORK

FROM
THE
FIRST
SETTLEMENT
TO
THE
PRESENT
TIME

BY
JOHN
ROBERTSON
OF
NEW YORK

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CALENDAR OF THE SCHOOL OF MEDICINE

1954-55

Date	Day	Occasion
1954:		
Sept. 14	Tuesday	Reexaminations
Sept. 16 and 17...	Thursday and Friday...	Registration for the academic year 1954-55
Sept. 20	Monday	Academic year begins
Nov. 11	Thursday	Fall Convocation. Holiday
Nov. 25-27	Thursday through Saturday	Thanksgiving recess
Dec. 30-Jan. 1....	Monday through Saturday	Christmas recess
1955:		
Jan. 3	Monday	Classes resume
Jan. 22	Saturday	Last day of classes for the Fall Term
Jan. 24-29	Monday through Saturday	Fall Term examination period
Jan. 31	Monday	Classes resume for the Spring Term
Feb. 22	Tuesday	Winter Convocation. Holiday
Apr. 8 and 9	Friday and Saturday	Easter recess
May 21	Saturday	Last day of classes for the Spring Term
May 23-31	Monday through Tuesday	Spring Term examination period
June 5	Sunday	Baccalaureate Sermon
June 8	Wednesday	Commencement

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University *ex officio* and the following persons by election:

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* Nominated by the alumni

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Thomas Martin Peery, A.B., M.D., *Director of Postgraduate Instruction; Director of Laboratories, the University Hospital*
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Professor Emeritus of Clinical Medicine
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Professor Emeritus of Anatomy
- WILLIAM JOHNSTON MALLORY, A.M., M.D.
Professor Emeritus of Medicine
- JAMES FARNANDIS MITCHELL, A.B., M.D.
Professor Emeritus of Clinical Surgery
- GEORGE BYRON ROTH, A.B., M.D.
Professor Emeritus of Pharmacology

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Assistant Clinical Professor of Medicine, Associate in Medicine, University Hospital
- JOHN PLETCH ADAMS, B.S., M.D.
Assistant Clinical Professor of Orthopedic Surgery, Associate in Orthopedic Surgery, University and D. C. General Hospital
- SAMUEL JACOB AIL, Ph.D.
Professorial Lecturer on Microbiological Chemistry
- SALOMON NAPIETALI ALBERT, A.B., M.D., D.A.
Instructor in Anesthesiology, University Hospital
- ERRETT CYRIL ALBRITTON, A.B., M.D.
Fry Professor of Physiology
- LOUIS KATZ ALPERT, B.S., M.D.
Adjunct Clinical Professor of Medicine, Associate in Medicine, University and D. C. General Hospitals
- SEYMOUR ALPERT, A.B., M.D.
Associate Professor of Anesthesiology, University and D. C. General Hospitals
- JAMES FRANCIS AMBURY, B.S., M.D.
Clinical Instructor in Medicine, Associate in Medicine, University Hospital

* The Staff of Instruction listed here and at the head of each department is for the academic year 1953-54.

- HARVEY AMMERMAN, B.S., M.D.
Clinical Instructor in Neurological Surgery. Associate in Neurological Surgery, University and D.C. General hospitals
- ELIZABETH POTTS ANDERSON, Ph.D.
Assistant Research Professor of Pharmacology
- HARRY FORD ANDERSON, M.D.
Professor of Dermatology and Syphilology. Chief of Service in Dermatology and Syphilology, University Hospital; Consultant in Dermatology and Syphilology, D. C. General Hospital
- ROBERT HARPER ANDERSON, M.D.
Clinical Instructor in Pediatrics. Associate in Pediatrics, University Hospital
- WILLIAM STATON ANDERSON, A.B., M.D.
Clinical Professor of Pediatrics. Associate in Pediatrics, University Hospital
- FRANK SOLOMON BACON, B.S., M.D.
Associate in Medicine. Associate in Medicine, University and D. C. General hospitals
- ALFRED BAER, A.B., M.D.
Clinical Instructor in Medicine. Associate in Medicine, University and D. C. General hospitals
- WILLIAM ELDRIDGE BAGEANT, M.D.
Clinical Instructor in Anesthesiology. Associate in Anesthesiology, University Hospital
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Associate Professor of Obstetrics and Gynecology. Associate in Obstetrics and Gynecology, University Hospital; Associate Chief, George Washington Obstetrics and Gynecology Division, D. C. General Hospital
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Clinical Instructor in Medicine. Associate in Medicine, University Hospital
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Clinical Instructor in Medicine. Associate in Medicine, University Hospital
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- JOSEPH BEINSTEIN, A.B., M.D.
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- RUTH BOSCHWITZ BENEDICT, A.B., M.D.
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- CARL BERG, M.D.
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- ROBERT WILLIAM BERLINER, B.S., M.D.
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STEWART WILLIAM BUSH, B.S., M.D.

Clinical Instructor in Medicine. Associate in Medicine, University and D. C. General hospitals

HOWARD PAINE CADWELL, A.B., M.D., M.P.H.

Clinical Instructor in Preventive Medicine

EDWARD ALEXANDER CAFRITZ, M.D.

Associate in Surgery. Associate in Surgery, University Hospital

- *PAUL CALABRISI, A.M.
Associate Professor of Anatomy
- RICHARD RAY CAMERON, A.B., M.D.
Professorial Lecturer in Anatomy
- RALPH JOHN CARBO, JR., A.B., M.D.
Clinical Instructor in Ophthalmology. Associate in Ophthalmology, University Hospital
- PIERRE EMMANUEL CARLO, Ph.D.
Assistant Professor of Pharmacology
- RICHARD BERNARD CASTELL, A.B., M.D.
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- WILLIAM PAXSON CHALFANT, JR., M.D.
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Clinical Instructor in Medicine. Associate in Medicine, University Hospital
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- HAROLD WILLIAM CLARK, JR., Ph.D.
Associate in Biochemistry
- HUGH GAMBEL CLARK, A.B., M.D.
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- ROBERT ALLEN CLAYTON, Ph.D.
Assistant Professor of Biochemistry
- CHARLES SEYMOUR COAKLEY, M.D.
Professor of Anesthesiology. Chief of Service in Anesthesiology, University Hospital; Associate in Anesthesiology, D. C. General Hospital
- ROBERT NORWOOD COALE, B.S., M.D.
Clinical Instructor in Medicine. Associate in Medicine, University Hospital
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GENERAL INFORMATION

INTRODUCTORY

The School of Medicine of The George Washington University was opened in March 1825; of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 and made a part of the organization of the School.

The School is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The degrees of the School of Medicine are recognized by all state examining boards.

PLAN OF INSTRUCTION

The work of the School is organized under the following departments: Anatomy; Anesthesiology; Bacteriology, Hygiene, and Preventive Medicine; Biochemistry; Dermatology and Syphilology; Medicine; Neurology and Neurological Surgery; Obstetrics and Gynecology; Ophthalmology; Otolaryngology; Pathology; Pediatrics; Pharmacology; Physical Medicine and Rehabilitation; Physiology; Psychiatry; Radiology; Surgery; and Urology.

The salient features in the method of instruction are thorough laboratory training, demonstrations, and clinical teaching, with recitations and lectures to clarify the many problems presented. Courses of clinical instruction are included in the announcements of the clinical departments. The clinical material in the various hospitals and outpatient departments is utilized to the fullest extent for both clinical instruction and laboratory work.

Each of the first three years of the medical curriculum is divided into two terms of sixteen weeks. First-year students begin their study with a one-week orientation program. Also in the first year students are given instruction in the arrangement of the medical library and the use of the bibliographic indexes and reference books. The senior year includes, in addition to the two sixteen-week terms, an eight-week summer term. One half of the senior class begins the summer term immediately upon completion of the junior year; the other half begins eight weeks later. Within certain limitations, students may elect the period of attendance and the service of assignment. There are no formal classes or examinations during this period.

EQUIPMENT AND FACILITIES

The George Washington University Hospital.—The hospital, with a capacity of 400 beds, was opened in 1948. This splendid edifice, which is one of the outstanding hospitals in the United States, is completely furnished with the latest and most scientific apparatus and equipment. Its purpose is to supplement existing hospital resources in the District of Columbia for the care of the sick and the injured; the education of students, physicians, and technicians; and the advancement of medical knowledge.

The hospital is staffed and controlled by the Faculty of the George Washington University School of Medicine and it provides excellent clinical material for the instruction of medical students. Virtually every specialty in the fields of medicine and surgery has assigned space and equipment in both the outpatient department and the bed-patient section of this modern institution.

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; bacteriology, hygiene, and preventive medicine; biochemistry; pathology; and pharmacology and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research Building.—The Research Building houses the George Wash-

ington University Cancer Clinic; special laboratories of the National Cancer Institute; and special laboratories concerned with the biochemical, pharmacological, and cytological aspects of cancer research; pharmacological laboratories for the synthesis and study of radiocarbon drugs; and other research laboratories of the Biochemistry, Physiology, and Surgery departments.

Medical Library.—The Medical Library contains a selected reference collection of more than 10,000 volumes, currently obtains important new medical works, and regularly receives the principal medical journals.

Inter-library loan service is maintained by close cooperation with other medical and scientific libraries throughout Washington and vicinity.

The Medical Library is open from 9:00 A.M. to 9:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 1:00 P.M. Saturday.

The Medical Library maintains a branch in Room 6037-A of the University Hospital for reference, research, and inter-library loan service. It is open from 2:00 to 6:00 P.M. Monday through Friday.

GOVERNMENT LIBRARIES AND MUSEUMS

The Library of the Surgeon General's Office of the United States Army is the most complete general medical library in the world. In addition to its great collection of medical works, all leading medical periodicals of the world are available. This Library, as well as the Library of Congress, the Public Library, and the many excellent libraries of the various government departments, is available to students and teachers through a service maintained by the Medical School Library.

The Army Institute of Pathology affords opportunity for studying the conditions met in military and general medicine and surgery. Its collection of anatomical and pathological specimens is unequalled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the Department of Agriculture all afford opportunities for study in Medicine and its allied sciences.

CLINICS

The City of Washington, with about a million inhabitants, provides ample clinical material. The University Hospital and Outpatient Department furnish clinical facilities and a large proportion of the materials studied in the courses in pathology and clinical pathology.

The University Hospital.—All clinics are under the supervision of the Dean, who is also Medical Director of the Hospital. This insures the highest possible utilization of available clinical material for teaching purposes and the proper supervision of clinicians and students; it brings the individual student into direct contact with patients and requires him

to do, under authoritative supervision, the clinical and laboratory work necessary for diagnosis and treatment; and it permits proper interpretation of the conditions occurring during the progress of cases and promotes the keeping of adequate records. Clinical and clinico-pathological conferences are held in which the history of cases, the physical findings, laboratory records, and the post-mortem pathology when available, are presented and correlated.

The Outpatient Department.—The Outpatient Department has clinical facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for clinical instruction in the Outpatient Department.

Cancer Clinic.—The facilities of the Cancer Detection Clinic are available to medical students. In addition the diagnosis and treatment of various forms of neoplasms are presented. The results of the treatment of neoplasms are evaluated by follow-up studies.

The Helen L. and Mary E. Warwick Memorial, for cancer and allied diseases, was affiliated with The George Washington University in July 1948. The purposes of this clinic are (1) to provide care for cancer patients, through group consultations within a cancer organization, and (2) to provide training for students and physicians in the field of oncology.

The District of Columbia General Hospital.—Clinical instruction is available in all branches of medicine. A great wealth of clinical material is afforded in this hospital and by ordinance of the municipal authorities of the District of Columbia, members of the Faculty of this School of Medicine, who are nominated by this University, are assigned approximately one-third of the patients for treatment and clinical study. Third-year students serve their clinical clerkships and fourth-year students are assigned for instruction in the specialties at this institution.

Children's Hospital.—Clinical instruction in pediatrics, dermatology, and orthopedic surgery.

St. Elizabeths Hospital.—Clinical instruction in mental and nervous diseases, medicine, post-mortem work, and gross pathology. This hospital with 6,800 beds, is maintained by the United States Government. The psychiatric clinic is one of the largest in the world.

Mt. Alto Hospital.—Clinical instruction in medicine and surgery is available and fourth-year students are assigned in rotation by section for clinical clerkships.

Walter Reed General Hospital.—Clinical instruction is available in surgery. Fourth-year students are assigned in rotation by section for clinical instruction.

ADMISSION

Ninety hours of credit applicable toward a degree in this University or another college of liberal arts and sciences are required for admission to the School of Medicine.

A credit hour represents one class hour or a minimum of two laboratory hours a week for a period of one term of approximately sixteen weeks.

PREMEDICAL COLLEGE REQUIREMENTS

Ninety Credit Hours

1. Chemistry, sixteen credit hours as follows: (a) eight credit hours in general inorganic chemistry of which at least four credit hours are laboratory work (qualitative analysis may be counted as general inorganic chemistry); (b) eight credit hours or a one-year college course of organic chemistry, including laboratory work.
2. Physics, eight credit hours, of which at least two credit hours are laboratory work. It is recommended that this course be preceded by one in trigonometry.
3. Biology, eight credit hours, of which at least four credit hours are laboratory work. This requirement may be satisfied by a course of eight credit hours in either general biology or zoology.
4. English composition and literature, six credit hours: the usual introductory college course or the equivalent. The student should develop facility in speaking and writing English.
5. Modern foreign language: a reading knowledge, preferably of French or German.
6. Electives. It is recommended that the remaining credit hours required include: (a) comparative vertebrate anatomy, botany, and vertebrate embryology; (b) qualitative and quantitative chemical analysis; (c) social science and psychology.

ADVANCED STANDING

A student who has satisfactorily attended one or two years at any other approved medical school, and who has the necessary preliminary educational requirements, may apply for advanced standing.

APPLICATION FOR ADMISSION

1. Full directions for application will be furnished on request. The applicant should ask the registrar of each college previously attended to send an official transcript of record to the Director of Admissions, The George Washington University. Photostatic copies of credentials

without the original signature of the certifying authority are not satisfactory. It is the responsibility of the applicant to see that all credentials are forwarded to the Admissions Office of the University.

2. A recent photograph, with signature, is required of each applicant.

3. As the number of qualified applicants for admission to the School each year far exceeds its capacity, the candidate for admission should secure from the colleges attended completely compiled premedical credentials and send them for evaluation well in advance of the term for which he is applying.

4. Applicants for admission are urged to take the Medical College Aptitude Test of the Association of American Medical Colleges.

5. A fee of \$5 to defray the costs of completing the records for final consideration for admission must accompany each application.

REGISTRATION

For the academic year 1954-55, registration will be conducted at the Medical School, 1335 H Street NW., from 10:00 A.M. to 4:00 P.M., September 16 and 17. Registration is for a period of one academic year.

FEES AND FINANCIAL REGULATIONS

The following fees have been adopted:

Tuition fee, for each academic year.....	\$850.00
Fee for special examinations, for each subject.....	5.00
Graduation fee	20.00

PAYMENT OF FEES

Fees for each term are \$425, payable in advance.

All fees are payable at the Office of the Cashier of the University, 725 Twenty-first Street NW. Fees due must be paid at the time of registration; no student is permitted to complete registration or to attend classes until fees are paid.

Registration in the School of Medicine is for a period of one academic year. After the student has entered the courses of instruction he is obligated for the full tuition for the academic year. No part of the tuition will be refunded upon withdrawal or dismissal for any cause. Acceptance by the School of a student's fees does not in any way obligate the School to accept the student for any subsequent year, and the right is reserved to drop any student from the School whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

Because the number of applicants far exceeds the limit of each class, places can be reserved only for those qualified applicants who remit a

deposit of \$100 which will be credited toward the tuition of the first term. Under no circumstances will this deposit be refunded.

Credit for work will not be given until, at the completion of a laboratory course, the student has replaced or paid for all articles of equipment or other University property which he has lost, broken, or destroyed. All breakage or loss not directly traceable to an individual student is assessed pro rata.

COST OF TEXTBOOKS AND STUDENT EQUIPMENT

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, etc.) is approximately as follows: first year, \$400; second year, \$250; third year, \$90; fourth year, \$80; total, \$820.

A fee of \$1 a term is charged for the use (optional) of a locker.

LOAN FUNDS

For information concerning loan funds consult the Office of the Dean.

REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the general University regulations, stated in the University Catalogue.

ABSENCE

Absence consists in being away from a class or clinic during a scheduled period, entering after the class or clinic has begun, or leaving before either is dismissed.

Excuse for absence due to sickness must be accompanied by a certificate signed by the attending physician and must be filed in the Office of the Dean.

For every unexcused absence a department will deduct one-half of one per cent from the student's final grade in the subject involved.

GRADES

The following grading system is used *A* (90-100); *B* (80-89); *C* (75-79); *D* (65-74) condition; *E* (below 64) failure; *Inc.*, incomplete, the passing grade in each subject is *C*.

A student who is conditioned in any subject will not be advanced until such condition is removed and then only by authority of the Committee on Scholarship.

EXAMINATIONS

Examinations, which may be written, oral, or practical, will be held at the end of each term.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations, except that students from those states and foreign countries which do not recognize the National Board may be exempted from Part II by action of the Committee on Scholarship.

APPLICATION FOR GRADUATION

Application for a degree should be filed in the Office of the Registrar at the time of registration for the senior year.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions, reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. It also provides first aid in the event of an emergency.

Medical privileges include: (1) the physical examination of all entering students; (2) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits.

PHYSICAL EXAMINATIONS

All first-year students are given a comprehensive physical examination upon admission to the School of Medicine. The students are informed of the findings and advised regarding such measures as will tend to maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School has maintained since 1938-39. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylactics exist.

AWARDS

John Ordronaux Prize.—This prize of \$150 is awarded annually to the member of the graduating class of the School of Medicine who has completed the four-year medical course with the highest scholastic standing. In 1952-53 this prize was awarded to David James Pillow.

Anna Bartsch Scholarship.—This scholarship, in the amount of \$500, established in 1946 by Dr. Anna Bartsch-Dunne as a memorial to her mother, Anna Bartsch, is awarded annually to a woman in the School of Medicine "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession." For the year 1953-54 this scholarship was awarded to Virginia Anna Duggins.

Anna Bartsch Internship.—In memory of her mother, Anna Bartsch, Dr. Anna Bartsch-Dunne established in 1946 a fund which provides \$15 a month to aid in the support of an internship in the University Hospital. This internship, assigned annually, was awarded for the year 1953-54 to Polly Teed Williams.

HONOR SOCIETIES

William Beaumont Medical Society.—Medical students showing unusual ability are elected by the active members of this society, which was founded to encourage and stimulate individual investigation.

Howard Kane-A. F. A. King Obstetrical Society.—The fifteen students

in the third and fourth year classes who maintain the highest grades in their work in obstetrics are eligible for membership.

Smith-Reed-Russell Society.—Students of the third and fourth years who maintain a scholastic average of 88 per cent are eligible for membership.

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at \$35 a month and double rooms at \$30 a month a person. Meals are served at the Student Union. Applications for rooms should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for twelve or more credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for \$24 a month a person. Dining facilities are available to all residents. Meals are also served at the Student Union. Application forms for reservations may be obtained from the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University for women students twenty-one years of age or older and for men students may be obtained at the offices of the Director of Activities for Women and the Director of Activities for Men, respectively. The reservation of rooms in private houses must be made by students.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, of reputable character, and free of all indebtedness to the University. He must have satisfied the admission requirements, completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

COMBINED ARTS AND MEDICINE CURRICULUM

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least ninety credit hours of prescribed college work (at least thirty credit hours and one year of residence must be completed in Columbian College, the senior liberal arts college), and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

HONORS

A candidate who has completed the four-year medical course with an average grade of *A* may be recommended for graduation "with distinction."

INTERN AND RESIDENT TRAINING PROGRAM

The George Washington University Hospital offers rotating-type internships as classified by the National Intern Matching Program, Inc. Twenty-five internships of one year each are offered; thirteen in the Department of Medicine with emphasis on medicine, ten in the Department of Surgery with emphasis on surgery, and two in the Department of Pathology with emphasis on pathology.

Rotating Internships, Emphasis on Medicine.—Interns will be assigned to seven months of general medicine, two months on the surgical service, and one month each on neuro-psychiatry, pediatrics, and obstetrics and gynecology.

Rotating Internships, Emphasis on Surgery.—Interns will be assigned to the surgical service for nine months, to general medicine for two months, and to obstetrics and gynecology for one month.

Rotating Internships, Emphasis on Pathology.—Interns will be assigned to the pathology service for eight months, to general medicine for two months, and to surgery for two months.

A total of approximately forty-two approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, oral surgery, pathology, physical medicine, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are of from one to four years depending upon the service. Appointments are for one year subject to renewal. In several of the fields there are affiliations with local and government hospitals.

Fellowships of one or two years are available to acceptable candidates in anesthesiology, cardiology, chest diseases, infectious diseases, outpatient service, physical medicine, rheumatic diseases, surgery and thoracic surgery.

For application blanks and further information, address the Superintendent, The George Washington University Hospital, Washington 7, D. C.

POSTGRADUATE INSTRUCTION

The School of Medicine offers annually a series of short intensive postgraduate courses, varying somewhat from year to year. The series is designed for physicians in practice. The significant advances in the various specialties are presented, together with summaries of older information.

The Kellogg Medical Lectures, inaugurated in 1948, are a series of evening lectures and clinics, presented by distinguished physicians from other cities, designed primarily for physicians practicing in Washington and the vicinity. They are also attended by the Faculty, postgraduate students, and members of the senior class of the School of Medicine.

During the academic year 1952-53 approximately 179 physicians were enrolled in postgraduate courses. For application blanks and further information, address the Director of Postgraduate Instruction, The George Washington University Hospital, Washington 7, D. C.

MEDICAL TECHNOLOGIST COURSE

The course for medical technologists consists of twelve consecutive months of didactic and practical work in all phases of clinical laboratory technique. The course meets the full requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. Prerequisites are 60 credit hours (two academic years) of college work including required credits in biology and chemistry.

Two classes are accepted each year, one entering in September and the other in March. Enrollment in each class is strictly limited so that personal instruction can be given.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the certifying examination given by the Registry of Medical Technologists.

For application blanks and further information, address the Director of Laboratories, The George Washington University Hospital, Washington 7, D. C.

COURSES OF INSTRUCTION

On the following pages of this **BULLETIN**, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the School of Medicine. The School of Medicine serves other divisions of the University by making available to non-medical students certain undergraduate and graduate courses in the following fields: Anatomy, Bacteriology, Biochemistry, Pathology, Pharmacology, Physical Medicine, and Physiology. The courses listed are subject to some slight change. The University reserves the right to withdraw any course announced.

EXPLANATION OF COURSE NUMBERS AND SYMBOLS

The number which precedes the name of a course indicates the term of the academic year in which the course is offered. An odd number indicates that the course is offered in the fall term; an even number, that it is offered in the spring term; and a double number (e.g., 343-44), that it begins in the fall term and continues in the spring.

A number in parentheses after the name of a course, indicates credit hours which may be earned by nonmedical students.

First-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500.

Courses offered in the School of Medicine for nonmedical students.—Courses numbered from 101-200 are planned for upper-division students in undergraduate curricula. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction. Courses numbered from 201 to 300 are planned for graduate students.

ANATOMY

Claude Matthews McFall, LL.B., Ph.D., *Professor of Anatomy*
 Ira Rockwood Telford, Ph.D., *Professor of Anatomy, Executive Officer*
 Webb Edward Haymaker, M.S., M.D., *Professorial Lecturer in Anat-*

omy

*Paul Calabrisi, A.M., *Associate Professor of Anatomy*
 Ivor Cornman, Ph.D., *Assistant Research Professor of Anatomy*
 Gerald Fred Hungerford, Ph.D., *Assistant Professor of Anatomy*
 Wilfred Walter Eastman, B.S., M.D., *Clinical Instructor in Anatomy*
 Raymond Nathan Brown, M.D., *Clinical Instructor in Anatomy*
 Richard Ray Cameron, A.B., M.D., *Professorial Lecturer in Anatomy*
 Francis Liell Wenger, B.S., M.D., *Fellow in Anatomy*

- 101-2 *Gross Anatomy* McFall, Telford, Hungerford
 Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. Eighteen hours a week, fall term; nine hours a week, spring term.
- 103 *Human Embryology* McFall and Staff
 The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology. Three hours a week.
- 105 *Neuro-anatomy* Cameron and Staff
 The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. Six hours a week.
- 106 *Microscopic Anatomy* Telford and Staff
 Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations. Six hours a week.
- 201-2 *Seminar (1-1)* Telford and Staff
 Reports and discussions of special topics by the Staff and graduate students. For graduate liberal arts students. Regular medical students are encouraged to attend. One hour a week.
- 295-96 *Research (arr.)* Telford and Staff
 Time, credits, and fees to be arranged.
- 299-300 *Thesis (3-3)* The Staff

* On leave of absence 1951-54

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*

Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*

Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*

William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*

Allen Widome, M.D., *Clinical Instructor in Anesthesiology*

Salomon Naphtali Albert, A.B., M.D., D.A., *Instructor in Anesthesiology*

Paula Reines Kaiser, M.B., Ch.B., M.D., *Fellow in Anesthesiology*

Dulcie Blunden Morris, M.D., *Fellow in Anesthesiology*

320 *Anesthesiology*

Review of basic sciences, correlation between basic sciences and clinical work. One hour a week.

The Staff

421-22 *Anesthesia Seminar*

Students attend anesthesia seminars during their surgical clinical clerkships. One hour a week. University Hospital.

The Staff

433-34 *Advanced Anesthesiology*

Students are rotated through the work of the department for a period of one week and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

The Staff

BACTERIOLOGY, HYGIENE, AND PREVENTIVE MEDICINE

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology, Executive Officer*
 Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
 Ralph Gregory Beachley, M.D., Dr.P.H., *Adjunct Professor of Public
 Health Practice*
 Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
 William Gray McCarten, M.S., *Assistant Professor of Bacteriology*
 Howard Paine Cadwell, A.B., M.D., M.P.H., *Clinical Instructor in
 Preventive Medicine*
 Vernon Jack Fuller, M.S., *Sanders Fellow in Bacteriology*
 Andrew John Vargosko, Jr., M.S. *Fellow in Bacteriology*
 William Donald Hann, B.S., *Fellow in Bacteriology*

SEMINAR LECTURERS

Chester Wilson Emmons, Ph.D., *Professorial Lecturer on Medical My-
 cology*
 Willard Hull Wright, D.V.M., Ph.D., *Professorial Lecturer on Medical
 Zoology*
 John Roderick Heller, Jr., B.S., M.D., *Professorial Lecturer on Cancer
 Control*
 Carl John Lauter, M.S., *Professorial Lecturer on Municipal Sanitation*
 Robert Carter Cook, *Professorial Lecturer on Medical Genetics*
 Robert Hanna Felix, M.D., M.P.H., *Professorial Lecturer on Mental
 Hygiene*
 Francis Byron Gordon, Ph.D., M.D., *Professorial Lecturer on Virology*
 Edward Kramer Funkhouser, B.S., *Professorial Lecturer on Community
 Health Resources*
 Samuel Jacob Ajl, Ph.D., *Professorial Lecturer on Microbiological
 Chemistry*
 Sarah Bishop Brooks, R.N., B.S. in P.H.N., *Professorial Lecturer on
 Public Health*
 Martin Marc Cummings, B.S., M.D., *Professorial Lecturer on Medical
 Bacteriology*

112 *General Bacteriology* (4)

For nonmedical students. A study of the fundamentals of bacteriol-
 ogy, including hygienic applications. Methods of cultivation and
 control of several groups of microorganisms are studied in the lab-
 oratory. Prerequisite: any biological laboratory science; Chemistry
 11-12. Laboratory fee, \$9. Tues., Thurs., and Sat., 9:10 to 12:00 A.M.

209 Medical Microbiology (1-11)

Parr, Griffin

Bacteria, rickettsia, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and diseases of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. Open to suitably prepared graduate students; may be elected as a whole or in part by adding the appropriate letter to the course number, with credit allocated as follows: (a) *Bacteriology*, including rickettsia and viruses—lecture (4), laboratory (3); (b) *Parasitology*, including medical mycology—lecture (2), laboratory (1); (c) *Immunology* (1). May be taken by a limited number of candidates for Master's degrees. Laboratory fee, \$3 for each credit hour of laboratory work. Time to be arranged.

210 Fundamentals of Epidemiology and Public Health (2)

Parr and Staff

Sources, modes, and implications of infection and injury. Consideration also given the problems of accidents and industrial medicine. Open to liberal arts graduate students. Prerequisite: Bacteriology 112 or 209. Mon., 2:00 to 4:00 P.M.

219-20 Advanced Microbiology (arr.)

Griffin and Staff

Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Bacteriology 112 or 209; Chemistry 151-52 or the equivalent; permission of the instructor. Laboratory fee, \$3 a credit hour. Time and credits to be arranged.

229 Virology (6)

Robbins

Study of viruses and rickettsiae. Lectures and laboratory exercises. For liberal arts graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, \$10. 1954-55 and alternate years.

230 Statistics in Microbiology (3)

Griffin

The application of statistical methods to the problems of microbiology. For liberal arts graduate students. Prerequisite: entrance or elementary college algebra. 1953-54 and alternate years, time to be arranged.

232 Immunological Methods (3)

Griffin

Preparation and testing of serological materials. Demonstration of basic serological phenomena. For liberal arts graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, \$6. 1954-55 and alternate years.

240 Advanced Epidemiology and Public Health (3)

Parr

Conferences, readings, and problems for graduate students dealing with specialized and advanced phases of the topics presented in Bacteriology 210. 1953-54 and alternate years, time to be arranged.

293-94 Staff Seminar (1-1)

The Staff

For liberal arts graduate students. Bi-weekly throughout the year. Time to be arranged.

- 295-96 *Research in Bacteriology* (arr.) The Staff
Time and credits to be arranged.
- 297-300 *Thesis* (3-3) The Staff
- 340 *Health Resources Survey* Beachley, Cadwell
A survey of complete medical care from first contact, through laboratory and clinical diagnosis, adequate medical or surgical treatment to full family and community rehabilitation. Case histories assigned junior students with the cooperation and assistance of the clinical departments. Comparison is to be made between care in near-ideal facilities and care in facilities where the student might begin his practice. Emphasis is on coordination of the private practice of medicine and community public health and welfare activities, both tax supported and voluntary. Throughout the holistic point of view is assumed. One hour a week for three weeks and independent research during summer.
- 401 *Public Health Practice* Beachley and Staff
Study of public health practice at national, state, city, and county levels. Public and private agencies. One hour a week for eight weeks.

BIOCHEMISTRY

Joseph Hiram Roe, Ph.D., *Professor of Biochemistry, Executive Officer*
 Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
 William Henry Sebrell, Jr., M.D., *Professorial Lecturer on Nutrition*
 George Washington Irving, Jr., Ph.D., *Professorial Lecturer on Proteins*
 Bernard Leonard Horecker, Ph.D., *Professorial Lecturer on Enzymes*
 Benjamin Williams Smith, Ph.D., *Assistant Professor of Biochemistry*
 Robert Allen Clayton, Ph.D., *Assistant Professor of Biochemistry*
 Klaus Schwarz, M.D., *Associate in Biochemistry*
 Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*
 Tze-Tung Tang, M.S., *Sanders Fellow in Biochemistry*
 Sidney Futterman, M.S., *Fellow in Biochemistry*
 Joy Dancis Stiller, A.B., *Fellow in Biochemistry*
 Seymour Byer, B.S., *Sanders Fellow in Biochemistry*

- 113-14 *Biochemistry* Roe and Staff
 Physiological and clinical chemistry. Two lectures, one conference hour, and two three-hour laboratory periods a week.
- 221-22 *Biochemistry (4-4)* Treadwell
 A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 22 and 152. Material fee, \$12 a term. Tues. and Thurs., 9:00 to 12:00 A.M. and 1:00 to 2:00 P.M.
- 224 *Biochemistry of the Enzymes (2)* Horecker
 Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. Mon., 4:00 P.M.
- 225 *Biochemical Preparations (3)* The Staff
 For liberal arts graduate students. Material fee, \$12. Time to be arranged.
- 226 *Biochemical Laboratory Methods (3)* The Staff
 For liberal arts graduate students. Material fee, \$12. Time to be arranged.
- 227-28 *Biochemistry Seminar (1-1)* Roe
 The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. Fri., 4:00 P.M.
- 231 *Proteins and Amino Acids (1)* Irving
 A lecture course for liberal arts graduate students. Prerequisite: Biochemistry 114 or 222. 1954-55 and alternate years, Mon., 5:00 P.M.

- 251 *Carbohydrate Metabolism* (1) Roe
A lecture course. Prerequisite: Biochemistry 114 or 222. 1954-55
and alternate years, Sat., 9:00 A.M.
- 261 *Biochemistry of the Lipids* (1) Treadwell
A lecture course. Prerequisite: Biochemistry 114 or 222. 1953-54
and alternate years, Sat., 9:00 A.M.
- 295-96 *Research in Biochemistry* (arr.) Roe, Treadwell
Time and credits to be arranged.
- 299-300 *Thesis* (3-3) Roe, Treadwell
- 404 *Applied Nutrition* (1) Sebrell
For senior medical students and graduate students. Lecture course
upon dietary requirements, deficiency diseases, and therapeutic diets.
Prerequisite: Biochemistry 113 or 221. Sat., 9:00 A.M.

DERMATOLOGY AND SYPHILOLOGY

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology.*
Executive Officer

George William Creswell, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Hayden Kirby-Smith, B.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Theodore Claremont Chen Fong, M.D., *Associate in Dermatology and Syphilology*

James Quincy Gant, Jr., M.S. M.D., *Associate in Dermatology and Syphilology*

Wendell Melvin Willett, M.D., *Associate in Dermatology and Syphilology*

Reuben Goodman, M.D., *Clinical Instructor in Dermatology and Syphilology*

313-14 *Dermatology and Syphilology* The Staff
Lectures on diseases of the skin and syphilis. One hour a week.

316 *Neurosyphilis* Fong
Lectures, clinical demonstrations, and practical diagnostic and therapeutic procedures.

317-18 *Clinic* The Staff
Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407-8 *Clinic* The Staff
Dermatology and syphilology in infants and children. Two hours a week. Childrens Hospital.

409-10 *Clinic* The Staff
Clinical demonstrations, diseases of the skin. Two hours a week. University Hospital.

411-12 *Clinic* The Staff
Clinical demonstrations, diseases of the skin, and diagnosis and therapy of syphilis. Two hours a week. University Hospital.

MEDICINE

- Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor of Medicine*
 Thomas McPherson Brown, A.B., M.D., *Professor of Medicine, Executive Officer*
 Charles Robert Lee Halley, A.B., M.D., *Clinical Professor of Medicine*
 Clayton Bernard Ethridge, M.D., *Clinical Professor of Medicine*
 Sol Katz, B.S., M.D., *Adjunct Clinical Professor of Medicine*
 Louis Katz Alpert, B.S., M.D., *Adjunct Clinical Professor of Medicine*
 Joseph Francis Fazekas, B.S., M.D., *Adjunct Clinical Professor of Medicine*
 Harry Eagle, A.B., M.D., *Professorial Lecturer in Medicine*
 Robert William Berliner, B.S., M.D., *Professorial Lecturer in Medicine*
 Henry Field, Jr., M.D., *Professorial Lecturer in Medicine*
 Monroe James Romansky, A.B., M.D., *Associate Professor of Medicine*
 Peter Diacoumis Comanduras, B.S., M.D., M.S. in Med., *Associate Clinical Professor of Medicine*
 John McCallum Evans, A.B., M.D., *Associate Clinical Professor of Medicine*
 Walter Kendall Myers, B.S., M.D., *Assistant Clinical Professor of Medicine*
 John Alton Reed, A.B., M.D., *Assistant Clinical Professor of Medicine*
 Theodore Judson Abernethy, B.S., M.D., *Assistant Clinical Professor of Medicine*
 William Travis Gibb, Jr., A.B., M.D., *Assistant Clinical Professor of Medicine*
 Roy Hertz, Ph.D., M.D., *Assistant Clinical Professor of Medicine*
 Alfred Henry Lawton, M.D., Ph.D., *Assistant Clinical Professor of Medicine*
 Samuel Ross Taggart, M.D., *Assistant Clinical Professor of Medicine*
 Benjamin Manchester, M.D., *Assistant Clinical Professor of Medicine*
 Clarence Richard Hartman, A.B., M.D., *Assistant Clinical Professor of Medicine*
 Pearl Holly, M.S., M.D., *Assistant Clinical Professor of Medicine*
 James Joseph Feffer, A.B., M.D., *Assistant Clinical Professor of Medicine*
 John Coleman Nunamaker, M.S., M.D., *Assistant Clinical Professor of Medicine*
 Ludwig George Lederer, M.D., Ph.D., *Assistant Clinical Professor (Research) of Medicine*
 John Eldrid Smith, A.B., M.D., *Assistant Clinical Professor (Research) of Medicine*

- Maurice Protas, A.B., M.D., *Associate in Medicine*
 John Minor, A.B., M.D., *Associate in Medicine*
 Lawrence Jay Thomas, B.S., M.D., *Associate in Medicine*
 Lawrence Elias Putnam, A.B., M.D., *Associate in Medicine*
 John Watkins Trenis, A.B., M.D., *Associate in Medicine*
 Bernard Lauriston Hardin, Jr., A.B., M.D., *Associate in Medicine*
 Albert David Kistin, A.M., M.D., *Associate in Medicine*
 Charles William Ordman, A.B., M.D., *Associate in Medicine*
 Andrew Gabriel Prandoni, B.S., M.D., *Associate in Medicine*
 Ruth Hechler Wichelhausen, M.D., *Associate in Medicine*
 Benjamin Calloway Jones, Jr., A.B., M.D., *Associate in Medicine*
 Richard Bernard Castell, A.B., M.D., *Associate in Medicine*
 Myer Harold Stolar, B.S., M.D., *Associate in Medicine*
 Sam Thompson Gibson, B.S., M.D., *Associate in Medicine*
 Walter Lewis Nalls, B.S., M.D., *Associate in Medicine*
 Alfred Brigulio, M.D., *Associate in Medicine*
 Halla Brown, M.D., *Associate in Medicine*
 Ralph Bretney Miller, A.B., M.D., *Associate in Medicine*
 Thomas Stone Sappington, A.B., M.D., *Associate in Medicine*
 John Christian Ransmeier, A.B., M.D., *Associate in Medicine*
 Monte Arnold Greer, A.B., M.D., *Associate in Medicine*
 Thomas James Kennedy, Jr., B.S., M.D., *Associate (Research) in Medicine*
 Jack Orloff, M.D., *Associate (Research) in Medicine*
 Ernest Cotlove, B.S., M.D., *Associate (Research) in Medicine*
 Samuel Jacob Nathan Sugar, Phar.G., M.D., *Associate in Medicine*
 Joseph Ney, B.S., M.D., *Associate in Medicine*
 Joseph Beinstein, A.B., M.D., *Associate in Medicine*
 Frank Solomon Bacon, B.S., M.D., *Associate in Medicine*
 Leonard Davis Fenninger, A.B., M.D., *Associate (Research) in Medicine*
 Henry Dunlop Ecker, B.S., M.D., *Associate in Medicine*
 Jack Jacob Rheingold, A.B., M.D., *Associate in Medicine*
 Irene Gorski Tamagna, M.D., *Associate in Medicine*
 Charles Adrian Michael Hogben, M.D., Ph.D., *Associate (Research) in Medicine*
 James Irving Boyd, M.D., M.S., *Lecturer in Medicine*
 Elizabeth Harman Hill, M.D., *Instructor in Medicine*
 John Bayne Marbury, M.D., *Clinical Instructor in Medicine*
 Louis Ross, M.D., *Clinical Instructor in Medicine*
 James Theodore Burns, M.D., *Clinical Instructor in Medicine*
 Frederic Dunbar Chapman, A.B., M.D., C.M., *Clinical Instructor in Medicine*
 Irvin Kerlan, B.S., M.D., C.P.H., *Clinical Instructor in Medicine*
 Virginia Patterson Beelar, A.B., M.D., *Clinical Instructor in Medicine*

- Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Clinical Instructor in Medicine*
Charles Edward Law, M.D., *Clinical Instructor in Medicine*
Emil Herbert Bauersfeld, A.B., M.D., *Clinical Instructor in Medicine*
John Wilmer Latimer, Jr., M.D., *Clinical Instructor in Medicine*
Luther Henry Snyder, A.B., M.D., *Clinical Instructor in Medicine*
Charles Wilson Jones, A.B., M.D., *Clinical Instructor in Medicine*
Stanley William Kirstein, B.S., M.D., *Clinical Instructor in Medicine*
Thomas Joseph Pekin, B.S., M.D., *Clinical Instructor in Medicine*
Robert George Taylor, M.D., *Clinical Instructor in Medicine*
Charles Waters Thompson, M.D., *Clinical Instructor in Medicine*
James Walling Long, M.D., *Clinical Instructor in Medicine*
James Francis Ambury, B.S., M.D., *Clinical Instructor in Medicine*
William Otis Bailey, Jr., M.D., *Clinical Instructor in Medicine*
Harry Clark Bates, B.S., M.D., *Clinical Instructor in Medicine*
Robert Norwood Coale, B.S., M.D., *Clinical Instructor in Medicine*
Eugene Solomen Gladsden, B.S., M.D., *Clinical Instructor in Medicine*
Israel Kessler, M.S., M.D., *Clinical Instructor in Medicine*
Maurice Menah, M.D., *Clinical Instructor in Medicine*
Francis James Murray, B.S., M.D., *Clinical Instructor in Medicine*
Edwin Pearson Parker III, B.S., M.D., *Clinical Instructor in Medicine*
Morris Hirsh Rosenberg, A.B., M.D., *Clinical Instructor in Medicine*
Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*
John William Du Chez, M.D., *Clinical Instructor in Medicine*
Thomas Lees Hartman, A.M., M.D., *Clinical Instructor in Medicine*
Boris Rabkin, A.B., M.D., *Clinical Instructor in Medicine*
Morton Harold Rose, M.D., *Clinical Instructor in Medicine*
George Sharpe, A.B., M.D., *Clinical Instructor in Medicine*
Marvin Fuchs, B.S., M.D., *Clinical Instructor in Medicine*
Frank Goodnow MacMurray, A.B., M.D., *Clinical Instructor in Medicine*
William Jack Weaver, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Ruth Boschwitz Benedict, A.B., M.D., *Clinical Instructor in Medicine*
Cyril Augustus Schulman, B.S., M.D., *Clinical Instructor in Medicine*
Louis Aleck Craig, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Abraham Wolfe Danish, A.B., M.D., *Clinical Instructor in Medicine*
Milton Gusack, A.B., M.D., *Clinical Instructor in Medicine*
William Lewis, M.D., *Clinical Instructor in Medicine*
Arthur Rosenbaum, B.S., M.D., *Clinical Instructor in Medicine*
Alvin Seltzer, B.S., M.D., *Clinical Instructor in Medicine*
Adolph Friedman, A.B., M.D., *Clinical Instructor in Medicine*
Samuel Dennis Loube, A.B., M.D., *Clinical Instructor in Medicine*
Alvin Edward Parrish, M.D., *Clinical Instructor in Medicine*
Nahum Raphael Shulman, M.D., *Clinical Instructor in Medicine*

- Stewart William Bush, B.S., M.D., *Clinical Instructor in Medicine*
 Jack Kleh, A.B., M.D., *Clinical Instructor in Medicine*
 Alfred Baer, A.B. M.D., *Clinical Instructor in Medicine*
 James William Hollingsworth, M.D., *Clinical Instructor in Medicine*
 Edward Luke Rea, A.B., M.D., *Clinical Instructor in Medicine*
 William Robert Felts, Jr., B.S., M.D., *Clinical Instructor in Medicine*
 Stanley Green, A.B., M.D., *Clinical Instructor in Medicine*
 James Packard Mann, M.D., *Clinical Instructor in Medicine*
 Theodore Harry Korthals, B.S., M.D., *Fellow in Cardiovascular Diseases*
 Aaron Birenbaum, M.D., *Fellow in Cardiovascular Diseases*
 John Peter Nasou, A.B., M.D., *Fellow in Medicine (Infectious Diseases)*
 Charles Joseph Savarese, Jr., A.B., M.D., *Fellow in Cardiovascular Diseases*

132 *History of Medicine*
 One hour a week.

The Staff

236 *Clinical Microscopy*
 Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, and excreta. Three hours a week.

The Staff

241 *Physical Diagnosis I*
 Theoretical considerations of the principles of physical diagnosis. One hour a week.

The Staff

242 *Physical Diagnosis II*
 Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients. Six hours a week.

The Staff

244 *Introduction to Medicine*
 Lectures covering the principles of internal medicine preparatory to clinical studies and training in the inpatient and outpatient services. Four hours a week.

The Staff

320 *Medical Jurisprudence*
 Lectures on the legal and ethical rights of physicians, and on the legal problems with which the physician comes in contact. One hour a week for sixteen weeks.

The Staff

325-26 *Clinical Clerkships*
 Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. Eight weeks. D. C. General Hospital.

The Staff

327-28 *Clinical Pathological Conferences I*
 Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff.

Choisser, Brown, and Staff

Clinical, laboratory, and necropsy findings are compared. One hour a week.

- 339-40 *Therapeutic Conferences I* Staff of Medicine and Pharmacology
Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. Two hours a week. University and D. C. General hospitals.
- 349-50 *Medical Conferences* The Staff
Two hours a week.
- 421-22 *Outpatient Clinics* The Staff
Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. Eight weeks. University Hospital.
- 423-24 *Clinical Clerkship* The Staff
Eight weeks. University and Mt. Alto hospitals.
- 427-28 *Clinical Pathological Conferences II* Choisser, Brown, and Staff
Continuation of Medicine 327-28. One hour a week.
- 431 *Forensic Medicine* The Staff
Organized in conjunction with the University Law School for the purpose of acquainting medical students with their legal responsibilities. Three hours a week for four weeks.

NEUROLOGY AND NEUROLOGICAL SURGERY

Walter Freeman, Ph.D., M.D., *Professor of Neurology, Executive Officer*

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery*

Hyman David Shapiro, M.D., *Associate Clinical Professor of Neurology*

Robert Henry Groh, B.S., M.D., *Assistant Clinical Professor of Neurology*

Jonathan Marshall Williams, M.D., *Assistant Clinical Professor of Neurological Surgery*

Paul Chodoff, A.B., M.D., *Associate in Neurology*

James Peter Murphy, B.S., M.D., *Associate in Neurological Surgery*

Hugo Victor Rizzoli, A.B., M.D., *Associate in Neurological Surgery*

*George Davis Weickhardt, M.D., *Associate in Neurology*

Oscar Legault, A.B., M.D., *Clinical Instructor in Neurology*

Harvey Ammerman, B.S., M.D., *Clinical Instructor in Neurological Surgery*

James Francis Hammill, B.S., M.D., *Clinical Instructor in Neurology*

Jean Esther Toncray, M.S., M.D., *Fellow in Neurology*

Rosa Helena Longo, M.D., *Fellow in Neurology*

249 Neurology (elective)

Freeman

Methods used to study the form and function of the nervous system. Lectures and laboratory demonstrations. One hour a week.

250 Neurology

Shapiro

Introductory lectures on clinical neurology with specimens, lantern slides, and motion pictures. One hour a week.

331 Neurology and Neurological Surgery

Watts, Freeman

Clinical lectures and demonstrations. One hour a week.

333-34 Neurology and Neurological Surgery, Clinical Clerkship

Freeman and Staff

Instruction in history, physical examination, ordinary clinical procedures. Attendance at neurosurgical operations. Six students in rotation, two weeks. D. C. General Hospital.

335-36 Neurological Conference

Freeman and Staff

Clinical conference one afternoon a week followed by clinicopathologic study of specimens from current necropsies. Two and one-half hours a week. Six students in rotation, two weeks. D. C. General Hospital.

* On national service leave

**431-32 *Neurology and Neurological Surgery
Clinic***

Shapiro, Watts

Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures, disposition of neuro-psychiatric cases, ward rounds. Six students in rotation. Two hours a week. University Hospital.

433-34 *Clinical Neurology*

Groh

Neurological inpatient examinations and demonstrations. Six students in rotation. Two hours a week. St. Elizabeths Hospital.

436 *Neurological Surgery (elective)*

Watts and Staff

Lectures and motion picture demonstration of neurosurgical problems. One hour a week.

OBSTETRICS AND GYNECOLOGY

- John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology, Executive Officer*
- Radford Brown, M.D., *Clinical Professor of Obstetrics and Gynecology*
- Jacob Kotz, M.D., *Clinical Professor of Obstetrics and Gynecology*
- Henry Laurant Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*
- Herbert Percy Ramsey, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*
- Robert Henry Barter, B.S., M.D., *Associate Professor of Obstetrics and Gynecology*
- George Nordlinger, A.B., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*
- Laurence Lee Cockerille, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*
- Samuel Mayer Dodek, A.M., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*
- Roger O'Donnell, Jr., A.B., M.D., *Associate in Obstetrics and Gynecology*
- Clayton Howard Hixson, M.D., *Associate in Obstetrics and Gynecology*
- Henry John Russell McNitt, B.S. in Med., M.D., *Associate in Obstetrics and Gynecology*
- James Albert Dusbabek, M.D., *Associate in Obstetrics and Gynecology*
- Clarence Kendall Fraser, Ph.B., M.D., *Associate in Obstetrics and Gynecology*
- Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*
- Jeremiah Keith Cromer, M.D., *Associate in Obstetrics and Gynecology*
- Floyd Sterling Rogers, M.D., *Associate in Obstetrics and Gynecology*
- Rufus Martin Roll, A.B., M.D., *Associate in Obstetrics and Gynecology*
- Katherine Elizabeth Parker, A.M., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- William Dandridge Terrell, Jr., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Julius Robert Epstein, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Morton Selwyn Kaufman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Caroline Jackson, A.M., M.D., *Clinical Instructor in Obstetrics and Gynecology*

- William Thurston Lady, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Jed Williams Pearson, Jr., A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Samuel Hazen Shea, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Thomas Miles Leonard, Ph.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Albert Seymour Bright, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Shirley Sue Martin, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Neel Jack Price, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Alexander LeSueur Russell, M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Marvin Peace Footer, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Donald Walters, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Joseph Marshall Friedman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Leon McNeely Liverett, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Robert James Brennan, A.B., M.D., *Research Fellow in Obstetrics and Gynecology*

254 *Normal Obstetrics*

Lectures and demonstrations on the physiology and management of normal pregnancy. One hour a week. Fraser, Dodek

301-2 *Manikin Demonstrations*

The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class in weekly sessions. D. C. Footer

337-38 *Abnormal Obstetrics*

Lectures and demonstrations on the complications of pregnancy. One hour a week. Parks, Nordlinger

343-44 *Gynecology*

Lectures and demonstrations on the principles of gynecology. One hour a week. Brown, Darner, Barter

351-52 *Clinical Clerkship*

Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. Four weeks. D. C. General Hospital. The Staff

441-42 *Clinical Obstetrics*

Students participate in prenatal and postnatal clinic care; observe the course of labor and deliver patients under supervision; attend biweekly departmental conferences and daily ward rounds in the University and D. C. General hospitals.

Parks, Barter

443-44 *Clinical Gynecology*

Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals.

Parks, Barter

OPHTHALMOLOGY

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology, Executive Officer*

Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*

Richard Wallace Wilkinson, M.S. in Med., M.D., *Assistant Clinical Professor of Ophthalmology*

Carmon Robert Naples, B.S., M.D., *Associate in Ophthalmology*

Walter Joseph Romejko, M.D., *Associate in Ophthalmology*

William Paxson Chalfant, Jr., M.D., *Associate in Ophthalmology*

William Joseph Graham Davis, A.B., M.D., *Associate in Ophthalmology*

Robert Edward duPrey, B.S., M.D., *Clinical Instructor in Ophthalmology*

Robert Day, A.B., M.D., *Clinical Instructor in Ophthalmology*

Jorge Guillermo Ramirez, B.S., M.D., *Clinical Instructor in Ophthalmology*

Ralph John Carbo, Jr., A.B., M.D., *Clinical Instructor in Ophthalmology*

351-52 *Ophthalmology*

The Staff

A lecture course presenting the principles of ophthalmology, with special reference to topics of importance to the general practitioner. One hour a week for sixteen weeks.

447 *Clinic*

The Staff

During medical outpatient service, each student is given individual instruction in the ophthalmological aspects of systemic disease. University Hospital.

OTOLARYNGOLOGY

Daniel Bruce Moffett, A.B., M.D., *Professor of Otolaryngology, Executive Officer*

William Herndon Jenkins, M.D., *Clinical Professor of Otolaryngology*

Aubrey David Fischer, M.D., *Assistant Clinical Professor of Otolaryngology*

James Jerry McFarland, Jr., B.S., M.D., *Associate in Otolaryngology*

Catharine Birch, A.B., M.D., *Clinical Instructor in Otolaryngology*

Aram Glorig, Jr., M.D., *Clinical Instructor in Otolaryngology*

Jack Louis Levine, M.D., *Clinical Instructor in Otolaryngology*

Morris Edward Krucoff, B.S., M.D., *Clinical Instructor in Otolaryngology*

Russell Smith Page, Jr., M.D., *Clinical Instructor in Otolaryngology*

Willard Beecher Walters, B.S., M.D., *Clinical Instructor in Otolaryngology*

Albert Sidney Winer, A.B., M.D., *Clinical Instructor in Otolaryngology*

351 *Otolaryngology*

Moffett, Jenkins

Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. One hour a week.

354 *Bronchoscopy*

McFarland

A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope. One hour a week for two weeks.

356 *Clinic*

The Staff

Practical clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. One and one-half hours once a week. D. C. General Hospital.

PATHOLOGY

Roger Morrison Choisser, B.S., M.D., *Professor of Pathology, Executive Officer*
 Thomas Martin Peery, A.B., M.D., *Professor of Pathology*
 Virgil Heath Cornell, M.D., Dr.P.H., *Professor of Pathology*
 Daniel Leigh Weiss, A.B., M.D., *Adjunct Clinical Professor of Pathology*
 Frank Nelson Miller, B.S., M.D., *Associate Professor of Pathology*
 William Newman, A.B., M.D., *Assistant Professor of Pathology*
 Edward Clifford McGarry, A.B., M.D., *Clinical Instructor in Pathology*
 William John Schewe, B.S., M.D., *Clinical Instructor in Pathology*

SEMINAR LECTURERS

Elson Bowman Helwig, B.S., M.D., *Professorial Lecturer in Pathology*
 Hans Frank Smetana, M.D., *Professorial Lecturer in Pathology*
 Henry Rappaport, M.D., *Professorial Lecturer in Pathology*
 Elizabeth Mapelsden Ramsey, A.B., M.D., *Professorial Lecturer in Pathology*
 Lent Clifton Johnson, B.S., M.D., *Professorial Lecturer in Orthopedic Pathology*

259-60 *Pathology*

Choisser and Staff

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissues. Fall term, ten and one half hours a week; spring term, three hours a week.

261-62 *Necropsy*

The Staff

Students are required to attend and assist in the performance of necropsies at the University and D. C. General hospitals.

263-64 *Case Studies in Pathology*

Peery

Gross specimens, microscopic sections, and photographs on representative cases are demonstrated and discussed. One hour a week.

320 *Medical Jurisprudence*

Miller

Forensic pathology and toxicology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine. One hour a week.

327-28 *Clinical Pathological Conference I*

Choisser, Brown, and Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff.

Clinical, laboratory, and necropsy findings are compared. One hour a week.

427-28 *Clinical Pathological Conference II*

Choisser, Brown, and Staff

Continuation of Pathology 327-28. One hour a week.

429-30 *Clinical Pathological Conference III*

Peery, Halley

Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there. One hour a week.

491-92 *Surgical Pathology*

Newman

Gross and microscopic surgical specimens are demonstrated and discussed. One hour a week.

493-94 *Pathology Clerkship*

Peery, Newman

A limited number of students receive training in surgical pathology and necropsies in the laboratory of the University Hospital.

PEDIATRICS

- Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics, Executive Officer*
- Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*
- Edward Lewis, M.D., *Clinical Professor of Pediatrics*
- William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
- Leroy Edward Hoeck, M.D., *Adjunct Clinical Professor of Pediatrics*
- John Augustine Washington, B.S., M.D., *Associate Clinical Professor of Pediatrics*
- Reginald Spencer Lourie, M.D., *Associate Clinical Professor of Pediatric Psychiatry*
- John Phillip McGovern, B.S., M.D., *Assistant Professor of Pediatrics*
- Joseph Michael LoPresti, B.S., M.D., *Assistant Professor of Pediatrics*
- Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
- Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
- Dorothy Steinle Jaeger-Lee, M.D., *Assistant Clinical Professor of Pediatrics*
- George Maksim, M.D., M.S. in Ped., *Assistant Clinical Professor of Pediatrics*
- Samuel Paul Bessman, M.D., *Assistant Clinical Professor of Pediatrics*
- William Allen Howard, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
- John Howell Peacock, B.S., M.D., *Associate in Pediatrics*
- Maynard Irving Cohen, A.B., M.D., *Associate in Pediatrics*
- Mary Katherine Laurence Sartwell, A.B., M.D., *Associate in Pediatrics*
- Allan Bertram Coleman, M.D., *Associate in Pediatrics*
- Lambert Gozef Herman Ramaekers, M.D., *Associate (Research) in Pediatrics*
- Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*
- Reginald Henry Mitchell, M.D., *Clinical Instructor in Pediatrics*
- Charles Frederick Stiegler, A.B., M.D., *Clinical Instructor in Pediatrics*
- Hugh Gambel Clark, A.B., M.D., *Clinical Instructor in Pediatrics*
- *Adrian Recinos, Jr., B.S., M.D., *Clinical Instructor in Pediatrics*
- Robert Orr Warthen, M.D., *Clinical Instructor in Pediatrics*
- Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*
- Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*
- Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*
- Robert Edward Martin, M.D., *Clinical Instructor in Pediatrics*
- Muriel Schatz Sowers, A.B., M.D., *Clinical Instructor in Pediatrics*

* On national service leave.

Charles Richard Webb, B.S., M.D., *Clinical Instructor in Pediatrics*
 William Stark, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
 Doris Honig Merritt, M.D., *Fellow in Pediatrics*
 Francis de Sales Woidich, B.S., M.D., *Research Fellow in Pediatrics*
 Irving Edward Hall, M.D., *Assistant in Pediatrics*
 Arthur Lincoln Goodrich, M.D., *Assistant in Pediatrics*
 Hilary Millar, L.R.C.P. and S.E., *Assistant in Pediatrics*
 Belinda Strait, M.D., *Assistant in Pediatrics*

256 *Pediatrics*

McLendon and Staff

Lectures on physiology of the newborn, development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Two hours a week. Medical School.

357-58 *Clinical Clerkship—
General Pediatrics*

McGovern, LoPresti, and Staff

Introduction to clinical pediatrics. Emphasis on bedside discussion and group seminars including the newborn. Ward rounds. Five students in rotation, two weeks. D. C. General Hospital.

359-60 *Clinical Clerkship—
Contagious Diseases*

McGovern, LoPresti, and Staff

Conferences and bedside discussion in contagious and infectious diseases. Prevention and quarantine measures. Five students in rotation, two weeks. D. C. General Hospital.

361-62 *Clinical Conference*

McLendon and Staff

Required. Presentation and discussion by students of current patient problems. One hour a week. D. C. General Hospital.

363-64 *Ward Rounds*

Nicholson, McGovern, LoPresti, and Staff

Bi-weekly ward rounds, with students and Resident Staff. D. C. General Hospital.

365-66 *Psychiatry*

Lourie and Staff

Lectures on normal behavior and emotional development. Clinical case analysis. Second, third, and fourth years.

457-58 *Clinical Clerkship*

Anderson, McGovern, LoPresti, and Staff

Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students six weeks. Children's Hospital.

459-60 *Outpatient Clinics*

McLendon and Staff

Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital.

461-62 *Clinico-pathological Conference*

The Staff

Clinical and pathological discussion of recent patient history and laboratory data. Once a week. Children's Hospital.

- 463-64 *Section Conferences* The Staff
Discussion of clinical problems of diagnosis and treatment of current patients. Twice a week. Children's Hospital.
- 465-66 *Section Conference* The Staff
Surgical diagnosis, pre- and post-operative management. One hour a week. Children's Hospital.
- 467-68 *Clinical Conference II* McLendon and Staff
Required. Case presentation by students. Staff and student discussion of diagnosis and management. One hour a week. Medical School.
- 469-70 *Child Guidance and Development* Jaeger-Lee, Lourie
Lectures to second year class. Clerkship in fourth year including Well Baby Clinic. Group and class conferences.

PHARMACOLOGY

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology, Executive Officer*

Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*

Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*

Pierre Emmanuel Carlo, Ph.D., *Assistant Professor of Pharmacology*

Harriet Mylander Maling, Ph.D., *Assistant Research Professor of Pharmacology*

Elizabeth Potts Anderson, Ph.D., *Assistant Research Professor of Pharmacology*

Sheldon Edward Reaume, Ph.D., *Assistant Research Professor of Pharmacology*

Clarke Davison, Ph.D., *Assistant Research Professor of Pharmacology*

Patricia Elly, A.M., *Research Fellow in Chemotherapy*

Charlotte Rebecca Hess, A.M., *Research Fellow in Chemotherapy*

James Leong Way, A.B., *U.S. Public Health Fellow in Pharmacology*

Helen Chiang-ying Yen, M.S., *Teaching Fellow in Pharmacology*

Elise Ann Brandenburger Brown, M.S., *Teaching Fellow in Pharmacology*

Edwin Ira Goldenthal, M.S., *Research Fellow in Pharmacology*

William Daniel Kundin, M.S., *Research Fellow in Chemotherapy*

Richard Salvador, M.S., *Research Fellow in Pharmacology*

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| 261 | Pharmacology (5)
Lectures and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. Five hours a week. | The Staff |
| 262 | Pharmacology (1)
Continuation of Pharmacology 261. One hour a week. | The Staff |
| 263 | Pharmacology Laboratory (2)
Laboratory instruction and demonstrations designed to complement Pharmacology 261. Open to qualified nonmedical students. Five hours a week. | The Staff |
| 265 | Chemotherapy (1)
Five lectures a week for three weeks. For graduate students. Time to be arranged. | The Staff |
| 267-68 | Pharmacological Research (arr.)
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. Hours and credits to be arranged. | The Staff |

- 269-70 *Pharmacology Seminar (1-1)* The Staff
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. Two hours a week.
- 280 *Special Methods in Research (arr.)* The Staff
A course to familiarize the student with advanced chemical and physiological methods employed in pharmacological investigations. Open to qualified nonmedical students. Hours and credits to be arranged.
- 299-300 *Thesis (3-3)* The Staff
Required of Master of Arts and Master of Science candidates.
- 339-40 *Therapeutic Conferences I* Staff of Pharmacology and Medicine
Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. One hour a week.

PHYSICAL MEDICINE AND REHABILITATION

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation, Executive Officer*

Josephine Jordan Buchanan, A.M., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*

Alvin Knudson, B.S., M.D., *Associate in Physical Medicine and Rehabilitation*

Jasper Wayne McFarland, B.S., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*

Helen Eileen Weber, B.S., R.P.T., R.N., *Assistant in Physical Medicine and Rehabilitation*

Sally Hale, B.S., R.P.T., *Assistant in Physical Medicine and Rehabilitation*

Francis Liell Wenger, B.S., M.D., *Fellow in Physical Medicine and Rehabilitation*

150 *Elements of Physical Medicine*

The Staff

In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability. Emphasis is placed on normal and abnormal peripheral nerve testing (electrodiagnosis), muscle testing, joint range, and other physical disability measurements.

351-52 *Advanced Physical Medicine*

The Staff

Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties.

467-68 *Clinical Studies*

The Staff

Clinical teaching and demonstration at the University Hospital.

485 *Research (arr.)*

The Staff

Open to medical students and qualified nonmedical students. Time and credits to be arranged.

PHYSIOLOGY

Errett Cyril Albritton, A.B., M.D., *Fry Professor of Physiology*
 Chester Elwood Leese, Ph.D., *Professor of Physiology, Executive Officer*
 Joseph William Still, M.D., M.P.H., *Assistant Professor of Physiology*
 Hyman Erwin Steinman, M.D., *Lecturer in Physiology*
 Katherine Virginia Greene, A.M., *Instructor in Physiology*
 Charles Arthur Toompas, A.M., *Instructor in Physiology*
 Louis Pat Munan, M.S., *Associate in Physiology*
 William Spector, A.M., *Associate in Physiology*
 Eberhard Georg Trams, B.S., *Fellow in Physiology*

- 115 Physiology (3)** Leese
 Lectures for nonmedical students covering the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one term of a biological science. Section A: Tues. and Thurs., 8:45 to 10 A.M.; section B: Tues. and Thurs., 5:10 to 6:25 P.M.
- 117 Experimental Physiology (1)** Greene and Staff
 Laboratory exercises in the fundamentals of physiology, for nonmedical students. Prerequisite or concurrent registration: Physiology 115 or the equivalent. Material fee, \$15. Sat., 9:10 to 12 A.M.
- 120 Physiology of Endocrine Activity (2)** Albritton, Munan
 For nonmedical students. The circulatory, metabolic, reproductive, growth, and other adaptations, immediate and long term, accompanying and affecting endocrine activity. Prerequisite: Physiology 115 or the equivalent. Tues. and Thurs., 6:10 P.M.
- 130 The Psycho-physiology of Personality (2)** Leese
 For nonmedical students. Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. Tues. and Thurs., 5:10 P.M.
- 150 Advanced Physiology** The Staff
 One hundred twenty-five physiological lectures and one hundred twenty-five laboratory hours devoted to the major divisions of the subject. For medical students.
- 201-2 Experimental Method (1-1)** Albritton
 For nonmedical graduate students. Design of controlled experiments in medical or biological investigation; errors in design; criticism and judgment of evidence; and tests of the statistical significance of experimental results. Sat., 9:00 A.M.
 Physiology 201X, same as 201, offered spring term.
- 211-12 Problems in Physiology (arr.)** The Staff
 For nonmedical graduate students. Open to undergraduate students with the approval of the Department. Prerequisite: Physiology 115 and 117, or the equivalent. Time and credits to be arranged.

221-22 *Physiology Seminar* (1-1) The Staff
For nonmedical students undertaking graduate work in physiology.
Prerequisite: Physiology 115 and 117, or the equivalent. Weekly throughout the year.

231 *Advanced Physiology of Circulation and Respiration* (4) Albritton, Leese, and Staff
For nonmedical graduate students. Lectures on blood, heart, circulation, tissue water, respiration, and acid-base balance. Four hours a week, to be arranged.

234 *Advanced Physiology of Nutrition, Metabolism, and Excretion* (2) Leese, Still, Steinman
For nonmedical graduate students. Lectures on nutrition, digestion, metabolism, excretion, and temperature regulation. Two hours a week, to be arranged.

236 *Advanced Physiology of the Endocrine Glands and Reproduction* (1) Albritton, Still, and Staff
For nonmedical graduate students. Lectures on ductless glands, hormones, humoral agents, and reproduction. One hour a week, to be arranged.

238 *Advanced Physiology of the Neuro-Muscular System* (2) Leese
For nonmedical graduate students. Lectures on sensory reception, central nervous processes, somatic and visceral motor activity, and the behavior of smooth and striped muscle. Two hours a week, to be arranged.

240 *Advanced Experimental Physiology* (3) The Staff
For nonmedical graduate students. Laboratory work only. Correlated with the lectures in courses 231-238. Material fee, \$36. Nine hours a week, to be arranged.

255-96 *Research* (arr.) Albritton, Leese, and Staff
Material fee, \$12 a credit hour. Time and credits to be arranged.

299-300 *Thesis* (3-3) Albritton, Leese

PSYCHIATRY

- Winfred Overholser, A.B., M.D., Sc.D., *Professor of Psychiatry, Executive Officer*
 Solomon Katzenelbogen, M.D., *Clinical Professor of Psychiatry*
 Addison McGuire Duval, M.D., *Clinical Professor of Psychiatry*
 Sidney Berman, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
 Morris Kleinermann, Ch.D., M.B., *Assistant Clinical Professor of Psychiatry*
 Leon Yochelson, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
 Henry Prather Laughlin, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
 Marshall de Graffenried Ruffin, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
 Anna Coyne Todd, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
 Jay Louis Hoffman, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
 Elmer Klein, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
 Norman Taub, B.S., M.D., *Associate in Psychiatry*
 William Green Cushard, M.D., *Associate in Psychiatry*
 Harold Corson, M.D., *Associate in Psychiatry*
 David Eden, A.B., M.D., *Clinical Instructor in Psychiatry*
 Clarence Bunge, B.S., M.D., *Clinical Instructor in Psychiatry*
 Robert Milton Greenberg, A.B., M.D., *Clinical Instructor in Psychiatry*
 John Joseph Blasko, B.S., M.D., *Clinical Instructor in Psychiatry*
 Helen Pallister, Ph.D., *Clinical Psychologist*

- 165 *Dynamics of Personality Development* Berman
 An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships. One hour a week.
- 178 *Psychopathology* Berman
 Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material. One hour a week.
- 266 *Psychiatry* Overholser
 History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole. One hour a week.

268 *Demonstration Clinics*

Cushard

Presentation of clinical cases of major mental illnesses and primary behavior disturbances, correlating with Psychiatry 266. Each student examines patients under supervision. Three hours a week. St. Elizabeths Hospital.

271 *Psychosomatic Aspects of General Medicine*

Katzenelbogen

Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders. One hour a week.

324 *Psychoneurosis*

Laughlin

Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. One hour a week. Medical Conference Room, D. C. General Hospital.

431-32 *Clinical Clerkship*

Duval, Kleinerman, Yochelson,

Ruffin, Taub, Corson, Pallister, Eden, Bunge, Greenberg
Supervised examination, diagnosis, and treatment of ambulatory borderline cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. Three weeks divided service. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital.

RADIOLOGY

William Woodrow Stanbro, M.D., *Professor of Radiology, Executive Officer*

Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*

Ludwig Carl Kroutil, A.B., M.D., *Assistant Clinical Professor of Radiology*

Charlotte Patricia Donlan, A.B., M.D., *Assistant Clinical Professor of Radiology*

George Tievsky, M.D., *Clinical Instructor in Radiology*

Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*

Alvin Charles Wyman, A.B., M.D., *Clinical Instructor in Radiology*

358 *Advanced Radiological Diagnosis*
Lectures and discussions.

The Staff

449 *Clinical Studies*

Students assigned in rotation on a full-time basis for a specific period to the X-ray Department.

The Staff

478 *Research*

Hours to be arranged.

The Staff

SURGERY

- Brian Blades, A.B., M.D., *Professor of Surgery, Executive Officer*
 Paul Stirling Putzki, M.D., *Clinical Professor of Surgery*
 Arch Lockhart Riddick, B.S., M.D., *Clinical Professor of Surgery*
 John Hugh Lyons, M.D., M.S., *Clinical Professor of Surgery*
 John Gordon Lee, A.B., M.D., C.M., Med. Sc.D., *Adjunct Clinical Professor of Surgery*
 Russell Kuhner Hollingsworth, M.S., M.D., *Professorial Lecturer in Surgery*
 Herbert Hermann Schoenfeld, M.D., *Associate Clinical Professor of Surgery*
 Alec Horwitz, M.S., M.D., *Associate Clinical Professor of Surgery*
 William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*
 Benjamin Franklin Dean, Jr., M.S., M.D., *Assistant Clinical Professor of Surgery*
 Carl Berg, M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Calvin Trexler Klopp, A.B., M.D., *Assistant Clinical Professor of Surgery*
 Julius Salem Neviasser, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery*
 Leonard Theodore Peterson, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Walter Henry Gerwig, Jr., A.B., M.D., *Assistant Clinical Professor of Surgery*
 Vincent Michael Iovine, B.S., M.D., *Assistant Clinical Professor of Surgery*
 John Pletch Adams, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
 Richard Knight Thompson, D.D.S., *Associate in Dental Surgery*
 William Ross Morris, M.D., *Associate in Surgery*
 Jacob Joseph Weinstein, B.S., Phar.G., M.D., *Associate in Surgery*
 William Carey Meloy, M.D., M.S. in Med., *Associate in Surgery*
 Edward Alexander Cafritz, M.D., *Associate in Surgery*
 Gordon Sparks Letterman, B.S., M.D., *Associate in Surgery*
 Owen Gwathmey, A.B., M.D., *Associate in Surgery*
 Karl Hayden Wood, Phar.G., D.D.S., *Associate in Dental Surgery*
 James Leo Kelley, A.B., M.D., *Instructor in Surgery*
 Arnold Martin Salzberg, A.B., M.D., *Instructor in Surgery*
 Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*

Joseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*
 Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*
 *Richard Lee Jackson, M.D., *Clinical Instructor in Surgery*
 Leon Gerber, M.D., *Clinical Instructor in Surgery*
 Thomas Bradley, A.B., M.D., *Clinical Instructor in Surgery*
 Ernest Alva Gould, B.S., M.D., *Clinical Instructor in Surgery*
 Austin Bertram Rohrbaugh, Jr., M.D., *Clinical Instructor in Orthopedic Surgery*
 Marvin Hayne Kendrick, A.B., M.D., *Clinical Instructor in Surgery*
 Brooks Gideon Brown, B.S., M.D., *Clinical Instructor in Surgery*
 Lois Irene Platt, A.B., M.D., *Clinical Instructor in Surgery (Cancer Cytology)*
 John Decator Hoyle, B.S., M.D., *Clinical Instructor in Surgery*
 Henry Leon Feffer, A.B., M.D., *Clinical Instructor in Orthopedic Surgery*
 Robert Roland Smith, B.S., M.D., *Clinical Instructor in Surgery*
 Howard Clemeth Pierpont, A.B., M.D., *Clinical Instructor in Surgery*
 Norman Harry Isaacson, A.B., M.D., *Clinical Instructor in Surgery*
 Charles Stanley White, Jr., B.S., M.D., *Clinical Instructor in Surgery*
 James Edward Boland, B.S., M.D., *Clinical Instructor in Surgery*
 Dennis Parfremment McCarty, M.D., *Clinical Instructor in Surgery*
 John Clifton Lucas, Jr., M.D., *Fellow in Surgery*
 Takashi Aoki, M.D., *Fullbright Fellow in Thoracic Surgery*
 William Chia-Len Liu, B.S., M.D., *Fellow in Surgery*

101-2 *Surgical Anatomy*

Clinics illustrating relationship between gross anatomy and clinical surgery. One hour every two weeks. University Hospital.

280 *Introduction to Surgery*

Lectures and recitations covering the field of general surgery. One hour twice a week. The Staff

284 *Surgical Physiology*

A clinical and laboratory course with particular emphasis on applied physiology. Two hours a week. The Staff

373-74 *Clinical Clerkship I*

The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital. The Staff

375-76 *Outpatient Surgical Clinic*

Surgical clinic. Forty hours. D. C. General Hospital. The Staff

377-78 *Orthopedics I*

Weekly orthopedic lecture, D. C. General Hospital; weekly seven and one-half hour ward rounds, D. C. General Hospital. The Staff

* On national service leave

- 379-80 *Surgical Staff Conference I*
Tuesday at D. C. General Hospital. The Staff
- 383-84 *Surgical Clinic I*
Demonstration of various surgical diseases to the entire class. One hour a week. Blades
- 473-74 *Clinical Clerkships II*
Six weeks, University Hospital; three weeks, Mt. Alto Hospital. The Staff
- 479-80 *Surgical Staff Conference II*
Wednesday at the University Hospital. The Staff
- 483-84 *Surgical Ward Rounds*
Demonstration of various surgical diseases to fourth-year clerks. One hour a week. University Hospital. Blades
- 491-92 *Surgical Pathology II*
One hour conferences each week. Newman
- 493-94 *Surgical Anatomy*
Lectures for fourth-year clerks. One hour a week for twelve weeks. Horwitz and Staff
- 497-98 *Surgical Clinic*
Conferences for fourth-year clerks assigned to the University Hospital. Two hours a week. Walter Reed Hospital. Blades and Staff

UROLOGY

Frederick A. Reuter, M.D., *Professor of Urology, Executive Officer*
 Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
 Gilbert Ottenberg, A.M., M.D., *Associate in Urology*
 William Dabney Jarman, B.S., M.D., *Associate in Urology*
 Edward Egner Ferguson, M.D., *Associate in Urology*
 Leon Richard Culbertson, B.S., M.D., *Associate in Urology*
 Gordon Rhodes MacDonald, B.S., M.D., *Clinical Instructor in Urology*
 Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*
 Frederick Turner Reuter, M.D., *Clinical Instructor in Urology*

395-96 *Clinics*

Clinical teaching and demonstrations on the care of urological cases
 with special emphasis on the pre- and post-operative management.
 Operative clinics and clinical teaching. D. C. General Hospital. The Staff

491-92 *Urology*

Lectures covering the entire field of urology including diagnosis, treat-
 ment, and morbid pathology. One hour a week. F. A. Reuter and Staff

495-96 *Clinics*

Clinical demonstrations, teaching in the Outpatient Department, and
 urological X-ray conferences, with special attention given to diagnostic
 procedures. One part of each section three hours a week. F. A. Reuter and Staff
 University Hospital.

DEGREES CONFERRED

DOCTOR OF MEDICINE

May 27, 1953

Charles Raymond Ashworth B.S. 1949, University of Idaho	Idaho	William Leoma Furlow A.B. 1949, Carleton College	Minn.
Carl Eugene Balli A.B. 1949, The George Washington University	Fla.	John Christian Galt, Jr. B.S. 1949, Yale University	Va.
Michael Vincent Baratta (With distinction)	N.Y.	William Henry Girard A.B. 1949, The George Washington University	Pa.
A.B. 1949, Columbia University	D.C.	William Hainsworth Grew B.S. 1949, Yale University	D.C.
Gilbert Donald Barker B.S. 1949, The George Washington University	N.C.	Howard Leo Gorman B.S. 1949, Georgetown University	Fla.
Mary Anne Bice (With distinction)	D.C.	M.S. 1949, The George Washington University	
A.B. 1949, University of North Carolina		Stanley Houston Gould B.S. 1949, Haverford College	Md.
Dorothy Ray Manpu, Brodie B.S. 1949, The George Washington University	D.C.	Russell Carl Gussner John Thomas Hartman, Jr.	Fla.
Jules Isaac Cahan (With distinction)	D.C.	Forest Knute Horne II B.S. 1949, The George Washington University	N.J. Md.
B.S. 1949, The George Washington University		Paul Thomas Healy James Roscoe Hulingsworth	W.Va. Calif.
Leonard Campbell Cobb B.S. 1949, University of Washington	Wash.	Perry John Howard B.S. 1949, University of Alabama	Ala.
Robert Franklin Colley B.S. 1949, Wake Forest College	Texas	Inez Lorraine Lee B.S. 1949, University of Rochester	N.Y.
Robert Little Colley B.S. 1949, Brooklyn College	N.C.	John Frederick Lee Jack Mennen Jensen	Pa. Utah
Melvin S. Cohen A.B. 1949, The George Washington University	N.Y.	Paul L. Knapp B.S. 1949, Northwestern University	Md.
Ray Bradford Conner, Jr. Charles David Connor A.B. 1949, East Carolina College	Va. Md.	M.S. 1949, University of California at Los Angeles	
Raul Costas, Jr. B.S. 1949, Villanova College	Puerto Rico	Robert Gordon Korman A.B. 1949, The George Washington University	Md.
David Stanley Davis (With distinction)	Ohio	Taylor Herman Kirby, Jr. A.B. 1949, Birmingham Southern College	Ala.
A.B. 1949, The George Washington University		Thomas Robert Kleh David Mendel Klein	D.C. D.C.
Robert Michael Delman B.S. 1949, University of Pittsburgh	Pa.	Robert LeRoy Lassen A.B. 1949, Montana State University	Mont.
Russell Hal Dobson Wm. Arthur Domann B.S. 1949, University of Wisconsin	Kans.	Patrick James Leary A.B. 1948, Municipal University of Omaha	Va.
James Douglas Dornety B.S. 1949, Villanova College	Wis.	John William Leabhart, Jr. B.S. 1949, University of Pittsburgh	Va.
Kenneth Alair Dreemeth A.B. 1949, Augustana College	N.J.	Don Woodward Longfellow A.B. 1949, The George Washington University	Md.
B.S. 1949, University of South Dakota	S.D.	Dale Hammer Mablebs B.S. 1948, A.B. 1949, Idaho State College	Idaho
Clayton Cleighton Duffy B.S. 1949, University of Nevada	Nev.	Carl Christopher Markwood B.S. 1949, St. Vincent College	Pa.
Jerome Harold Epstein A.B. 1949, New York University	D.C.	Joseph Azim McCown B.S. 1948, Utah State College	Utah
A.M. 1949, The George Washington University		John Greaser McGehee, Jr. A.B. 1949, Stanford University	Ariz.
William Holmes Ferguson B.S. 1949, University of Tulsa	Okla.	John Wallace M. Meel A.B. 1949, The George Washington University	Md.
Charles William Foulke A.B. 1949, Ohio State University	Ohio		

Thomas Francis Meaney (With distinction) B.S. 1949, Georgetown University	D.C.	Stanley Melvin Sager B.S. 1946, United States Merchant Marine Academy	D.C.
Roger Randolph Miesfeld B.S. 1949, University of Wisconsin	Va.	A.B. 1949, Duke University	Iod.
Glenn Collins Miller Howell Douglas Miller D.V.M. 1941, Agricultural and Mechanical College of Texas	Calif. D.C.	Bertram Webb Sanders A.B. 1949, Earlham College	D.C.
Robert Thomas Miller B.S. 1949, Rutgers University	N.J.	Melvin Wesley Sandmeyer, Jr. A.B. 1950, The George Washington University	Md.
Walter James Nelson B.S. 1948, University of Wisconsin	Ariz.	John William Saville (With distinction) A.B. 1950, The George Washington University	N.C.
Gerald Albert Oilschlager Melvin Oram B.S. 1949, University of Scranton	Wis. Pa.	Charles Frederick Simpson B.S. 1949, Wake Forest College	Okla.
Richard Roberts Owen B.S. 1949, The George Washington University	Ind.	Casper Hayden Smith (With distinction) Carl Edward Solomonson B.S. 1950, Western Reserve University	Ohio
Glenn Ernest Padgett A.B. 1949, Duke University	Fla.	Harold Lynn Speevack B.S. 1949, Ohio University	Wash.
Louis Robert Perna A.B. 1950, The George Washington University	D.C.	James Arthur Stansfield B.S. 1949, Washington State College	Ala.
David James Pillow (With distinction) B.S. 1949, Texas Christian University	Texas	Jonas Hartnell Stewart, Jr. B.S. 1949, Alabama Polytechnic Institute	Ky. Mich.
Cranford Oliver Plyer, Jr. B.S. 1948, High Point College	N.C.	Noel Faine Strasser Gerald Edward Stronaki B.S. 1950, Wayne University	D.C.
Robert Smallwood Poole A.B. 1950, The George Washington University	D.C.	Ernest Howard Teagle, Jr. A.B. 1949, The George Washington University	N.C.
Bennet Allen Porter, Jr. (With distinction) Curtis Lee Price	Md.	Edward Young Cox Thorne A.B. 1949, University of North Carolina	Maine
Joseph Edwin Rawlings, Jr. A.B. 1950, The George Washington University	Calif. D.C.	James Leonidas Tsomides A.B. 1950, Bowdoin College	N.Y.
David Joseph Rosenblum (With distinction) B.S. 1949, The George Washington University	N.Y.	Robert Irwin Tugendhaft B.S. 1948, The George Washington University	Mich.
Stanley Bernard Rosendorf (With distinction) B.S. 1948, University of Maryland	Md.	Clarence Houston Vann B.S. 1947, Wayne University	Wis.
M.S. 1952, The George Washington University		Charles George Wellao B.S. 1949, University of Wisconsin	D.C.
Miriam Bernstein Rosenthal (With distinction) A.B. 1949, Mount Holyoke College	Md.	Polly Teed Williams B.S. 1948, The George Washington University	

STUDENTS REGISTERED IN THE SCHOOL OF MEDICINE

1953-54

A

Aaronson, Charles Martin (III)
A.B. 1952, The George Washington
University
Alarcon, Martha Odette (I)
A.B. 1953, Wellesley College
Albert, Harold Franklin (IV)
B.S. 1950, Muhlenberg College
Anderson, Barrett Christian (I)
A.B. 1951, San Jose State College
Anderson, Donald Kintear (II)
A.B. 1952, Yale University
Anderson, George Harold, Jr. (I)
A.B. 1951, The George Washington
University
Anderson, William Bruce (I)
A.B. 1950, Stanford University
Applegate, David Carl (IV)
A.B. 1950, University of California
Applegate, William Vale (I)
A.B. 1951, University of California
Armstrong, Richard Merrill (IV)
B.S. 1950, University of Idaho
Arnes, John Allan (I)
A.B. 1951, The George Washington
University
Auerbach, Jack (II)
Ayer, James Albert (II)
A.B. 1952, University of Southern
California

B

Bachus, Hakeeb (IV)
B.S. 1947, Howard University
B.S. 1948, Ph.D. 1950, The George
Washington University
Bair, Robert Henry (IV)
B.S. 1950, University of Wisconsin
Baizer, Gordon (III)
A.B. 1947, Concordia Seminary
Bannister, Bruce Clatter (II)
B.S. 1952, Georgetown University
Barr, Jack Lee (II)
Barr, Solomon Dismen (IV)
A.B. 1951, The George Washington
University
Barrington, Frank Thomas (II)
A.B. 1952, Duke University
Baylor, Richard Albert (III)
A.B. 1951, University of California
Bee, George Wendell, Jr. (I)
B.S. 1951, University of Maryland
Bee, Robert Andrew (I)
B.S. 1951, University of Maryland
Bee, Franklin David (III)
B.S. 1951, Duke University
Beecham, Charles Ludwig, Jr. (I)
A.B. 1950, Montana State University
Beebe, Leonard (I)
B.S. 1951, Queens College
Beebe, Stuart Paul (I)
A.B. 1951, New York University

D.C.

Guatemala

Pa.

Calif.

Ohio

Ariz.

Oreg.

Calif.

Calif.

Idaho

Va.

D.C.

Ariz.

Md.

Wis.

N.J.

D.C.

Md.

Ohio

D.C.

Md.

D.C.

Calif.

Md.

Va.

Calif.

Mont.

N.Y.

N.Y.

Blackwelder, Theodore Fisher (II)
B.S. 1952, Roanoke College
Bloom, Joseph (IV)
A.B. 1949, Brown University
Blum, Fred G., Jr. (IV)
B.S. 1950, University of Wisconsin
Bohrer, Norman Kay (I)
B.S. 1951, Franklin and Marshall
College
Boles, Roger (II)
A.B. 1949, Stanford University
Boone, Aretas Cephus (IV)
A.B. 1950, Stanford University
Boor, Samuel Vladimir (I)
Boyd, Milton Alexander (IV)
B.S. 1950, State College of Washington
Brown, Charles Harmon (II)
A.B. 1952, Lafayette College
Buchmann, Berthe Clara (I)
Bullock, Robert Graham (IV)
A.B. 1950, Johns Hopkins University
Buran, David John (I)
A.B. 1951, Carleton College
Burgoyne, Rodney William (I)
Burns, Lafayette Ernest (III)
B.S. 1951, University of California
Butler, Bruce, Jr. (III)
B.S. 1951, Franklin and Marshall
College
Butter, Charles (IV)
B.S. 1950, Western Reserve University
Byer, Seymour (I)
B.S. 1951, M.S. 1952, The George
Washington University

Md.

Md.

Wis.

D.C.

D.C.

Calif.

Calif.

Md.

Va.

Fla.

Md.

Va.

D.C.

Idaho

Calif.

Md.

Conn.

C

Calvert, Francis Nelson (III)
A.B. 1951, Howard College
Canter, Jerome Wadd (III)
Cantrell, Joe Rutledge (III)
Carlson, Paul Earle (II)
A.B. 1951, Stanford University
Carlton, Harry Nelson (IV)
B.S. 1949, M.S. 1950, The George
Washington University
Carr, Lawrence Barrows (I)
A.B. 1951, Stanford University
Carter, Thomas Nelson (III)
B.S. 1951, American University
Chaney, James William (IV)
A.B. 1949, Catholic University of
America
M.S. 1950, The George Washington
University
Chapman, John Timothy (III)
Chase, Morris Allen (I)
A.B. 1951, Wheaton College
Chervenak, William Aloysius (III)
Ciechra, Albert (II)
A.B. 1952, Washington and Jefferson
College
Cimmino, Vito John (I)

Va.

N.Y.

Mass.

D.C.

Md.

Calif.

D.C.

D.C.

Wash.

Calif.

Pa.

Pa.

Va.

Clark, Gilbert Reed (I)	Md.	Dodek, Oscar Irving, Jr. (II)	D.C.
B.S. 1953, University of Maryland		Domann, John Thomas (II)	Wn.
Cock, Thomas Charles (III)	Calif.	B.S. 1951, University of Wisconsin	
A.B. 1952, The George Washington University		Donnelly, Orville Wright (I)	Md.
Colevas, Prokopos (IV)	D.C.	A.B. 1943, Swarthmore College	
A.B. 1951, The George Washington University		M.S. 1952, The George Washington University	D.C.
Colfax, Raymond Eugene (III)	Va.	Downs, Edward Alley (IV)	D.C.
A.B. 1950, University of California		A.B. 1950, Harvard University	
Collins, Kenneth Claude (III)	Colo.	Duffy, Michael Mann (I)	Va.
A.B. 1952, University of Denver		A.B. 1953, Dartmouth College	
Conklin, Harvey Badam (III)	D.C.	Duggins, Virginia Anne (III)	
A.B. 1951, Ohio Wesleyan University		A.B. 1942, Sweet Briar College	
Cooper, Boyd (II)	Va.	A.M. 1951, The George Washington University	D.C.
Cooper, Emmett Monroe (II)	Md.	Dyer, Robert Francis (III)	
Coram, Frank John (III)	Calif.	A.B. 1951, University of Michigan	
A.B. 1950, San Diego State College			
Countriman, Louis Kenneth (I)	Calif.	E	D.C.
A.B. 1952, University of California		Eanet, Lawrence Joseph (II)	
Coyish, Maurice Clyde (II)	Calif.	A.B. 1952, Harvard University	N.Y.
Coyish, Mervyn Jack (I)	Calif.	Eden, John (I)	
Cox, Donald William (I)	D.C.	A.B. 1951, New York University	D.C.
B.S. 1951, Mount Union College		Esbert, William Richard (II)	
Craibree, Robert Herman (IV)	Idaho	B.S. 1952, Brigham Young University	Md.
Craft, Robert Harold (I)	Md.	Elman, Donald Quentin (IV)	N.C.
B.S. 1951, The George Washington University		Ellington, William Thomas (II)	
Craide, James New (II)	N.Y.	A.B. 1952, Duke University	Md.
Cripe, Jerome Henry (I)	Ind.	Ellis, George Joseph, Jr. (II)	
B.S. 1953, Indiana University		A.B. 1952, Catholic University of America	N.Y.
Crummett, John David (III)	D.C.	Ellsworth, James Ethelmer (I)	D.C.
A.B. 1951, The George Washington University		Endres, Richard John (III)	
Culver, John Rush (III)	Md.	A.B. 1950, University of Washington	P.C.
Curtier, Clifford Noble (I)	Utah	Epstein, Burton Seymour (I)	D.C.
Cutler, Elvin James (I)	Idaho	Erkenbeck, Richard Vernon (II)	
B.S. 1953, Idaho State College		B.S. 1952, University of Maryland	P.C.
		Esch, Albert Frederick (IV)	
		A.B. 1949, A.M. 1950, The George Washington University	Pa.
D			
Danford, Henry Warren (II)	Ill.	Evans, John Jacob (II)	
A.B. 1950, Yankton College		A.B. 1947, Lehigh University	
Darford, James Arthur (IV)	Ohio	M.S. 1947, The George Washington University	
B.S. 1950, University of Dayton			
Daum, Jere Jack (I)	Pa.	F	Lebanon
B.S. 1951, Franklin and Marshall College		Farha, Suhavi Jamil (I)	
Davis, Martin Thomas (IV)	Conn.	A.B. 1951, West Virginia University	Md.
B.S. 1948, Rensselaer Polytechnic Institute		Feather, Ben W. (II)	
M.S. 1950, The George Washington University		A.B. 1952, Duke University	Puerto Rico
Dawson, Shelton Phelps (III)	Utah	Feldes, Francisco, Jr. (III)	
A.B. 1952, The George Washington University		B.S. 1950, The George Washington University	N.M.
Debevoise, Neilson Thomas (II)	Va.	Fee, Norman Francis (II)	
Delebre, Bruce Karl, Jr. (I)	Calif.	A.B. 1952, Colleton College	Va.
B.S. 1951, University of Maryland		Fetel, Morris (I)	
Dejer, Stephen William (IV)	Md.	Feltham, David Brown (III)	
A.B. 1950, Western Maryland College		A.B. 1952, The George Washington University	N.Y.
Der-Stepanian, Oskan (II)	Iran	Fennick, John (II)	
A.B. 1952, Harvard University		B.S. 1952, Rutgers University	ME
Despain, Robert Verne (I)	Utah	Ferer, Harmon Benjamin (I)	
DeVries, William Henry (I)	Calif.	A.B. 1950, Lafayette College	Puerto Rico
DeWitt, Harvey Jennings (II)	Calif.	Fernandez, Alexis (I)	
Di Re, John Joseph (I)	N.Y.	B.S. 1951, Georgetown University	P.C.
B.S. 1951, M.G.I. University		Fleming, Edward Scott (II)	
Di Re, Leonard Benjamin (I)	N.Y.	A.B. 1951, University of North Carolina	One
B.S. 1951, McGill University		A.M. 1951, University of Texas	
Dixon, David George (I)	D.C.	Flickinger, Ted Lawrence (IV)	Md.
A.B. 1951, Brigham Young University		B.S. 1950, Western Reserve University	
Diton, Willard Charles (I)	Utah	Fockus, Steve Frederick (IV)	
A.B. 1952, Brigham Young University		B.S. 1949, University of Maryland	

Foust, Betty Jean (I) A.B. 1954, The George Washington University	D.C.	Hodge, Clarence Hardman (I) Holley, John Calvert, Jr. (II) A.B. 1952, Vassar College	Calif. Fla.
G		Holliman, William Jenkins, Jr. (I) Horowitz, Bruce Gordon (III) A.B. 1954, Harvard University	Va. Calif.
Galbraith, William Bruce (I) B.S. 1951, Arizona State College (Tempe)	Md.	Horton, Richard Edward (IV) Huck, Vernon Neal (IV) Hudson, Richard Myall (III) A.B. 1951, Haverford College	Md. Calif. Md.
Gallonek, Wilfred Ernest (III) A.B. 1941, Syracuse University	N.Y.	Hung, Wellington (I) B.S. 1952, American University	D.C.
Gibbs, Courley Paul (I) B.S. 1953, St. Peter's College	N.J.	Huntwork, Bruce Leslie (III)	Calif.
Gibbs, Robert Courtney (II) B.S. 1949, University of Florida	Fla.	I	
Gibbs, Wesley Harmon (III) A.B. 1951, University of California at Los Angeles	Calif.	Ionno, Joseph Anthony (III) A.B. 1954, The George Washington University	Conn.
George, Lynn Darcy (II) A.B. 1953, The George Washington University	Va.	Irwin, Willy Layne (I) B.S. 1951, George City College	Pa.
George, Myron Don (II) A.B. 1952, Stanford University	Kans.	Izawa, Edward Haruki (I) A.B. 1951, University of Texas	Hawaii
Gibbs, John Francis (IV) B.S. 1946, Park College	Ariz.	M.S. 1952, University of Hawaii	
Gibbs, Charles Richard (III) A.B. 1951, University of Missouri	Va.	J	
Gibbs, Parvin Douglas (III) A.B. 1951, Dartmouth College	Md.	Jackson, Edwin W. (II) A.B. 1952, Occidental College	Calif.
Gibbs, Marcus Ronald (I) A.B. 1951, Humboldt State College	Ky.	Jackson, Ralph (I) A.B. 1951, New York University	N.Y.
George, David Kermer (IV) A.B. 1951, The George Washington University	Calif.	K	
George, Edward Harvey (I) B.S. 1952, Wheaton College	Md.	Kahlschlag, Richard Allen (II) B.S. 1952, Franklin and Marshall College	Pa.
Gibbs, James Hartman (I) A.B. 1951, Duke University	III	Kane, William Matthew, Jr. (IV) A.B. 1951, College of the Holy Cross	Md.
George, Walter Edwin (I) A.B. 1951, University of Washington	D.C.	Kelam, Donald Swain, Jr. (III) A.B. 1952, The George Washington University	Va.
H		K	
Hatch, John Thomas (I) B.S. 1951, Philadelphia College of Pharmacy and Science	D.C.	Kelley, Joseph Charles (III) A.B. 1951, University of Pittsburgh	D.C. Pa.
Hatch, Wayne Stanton (I) A.B. 1951, Young University	Ariz.	Kennedy, Robert William (II) Kob, Michael Charles, Jr. (III) Koon, Stephen Martin (I) Koon, Paul Raymond (IV) A.B. 1951, University of California	D.C. N.I. D.C. D.C. Calif.
Hatch, Marie Adele (I) A.B. 1951, College of New Rochelle	N.Y.	Koon, Herbert Louis (II) Kramer, Norman Clifford (IV) B.S. 1951, The George Washington University	D.C. D.C.
Hatch, Harold Russell (II) B.S. 1952, Franklin and Marshall College	Pa.	Kramer, Louis J. (III) B.S. 1951, Pennsylvania State College	Pa.
Hatch, Kermit Henry (I) A.B. 1951, Carroll College	Wis.	Kramer, Herbert (IV) A.B. 1948, Syracuse University	N.Y.
Hatch, John Warren, Jr. (IV) A.B. 1951, University of Wisconsin	Wis.	Kramer, Lawrence Ray (III) A.B. 1951, The George Washington University	III
Hatch, John Thomas (III) A.B. 1951, Rutgers University	N.J.	Kramer, Fredrick Henry (IV) B.S. 1951, Union College	N.I.
Hatch, Cornelius John (IV) A.B. 1951, Yale University	Conn.	L	
Hatch, John Robert (IV) A.B. 1951, Johns Hopkins University	D.C.	Lambert, Margaret Louise (II) A.B. 1951, The George Washington University	Va.
Hatch, Elton (II) A.B. 1951, University of Wisconsin	D.C.	LaMonte, James (III) LaMonte, Samuel Harbards, Jr. (III) A.B. 1951, Oberlin College	Md. Ky.
Hatch, Robert Monroe (IV) A.B. 1951, Harvard University	Wis.	Lee, Hei Kit (III) Lentz, Sarah Emma (II) A.B. 1951, Wells College	China Md.
Hatch, Robert Hally (IV) A.B. 1951, Harvard University	N.Y.		
Hatch, Fred George (III) A.B. 1951, Syracuse University	Md.		
Hatch, Stephen Barthold (III) A.B. 1951, Lafayette College			

Lester, Melvin Arthur (II) A.B. 1952, Montana State University	Mont.	McNeal, John Enright (I) A.B. 1952, University of Miami	Va.
Levitsky, Leon Robert (IV) B.S. 1951, Muhlenberg College	Pa.	McQuarrie, Howard Gurr (III) A.B. 1951, Gettysburg College	Utah
Lewis, Edward, Jr. (III) A.B. 1951, The George Washington University	Md.	Miele, Albert John (IV) B.S. 1952, Georgetown University	Pa.
Lidsky, Martin David (IV) B.S. 1952, The George Washington University	D.C.	Miller, Robert Allen (II) A.B. 1952, Duke University	Fla.
Linaweaver, Paul Glenwood, Jr. (III) A.B. 1951, Duke University	Va.	Minard, William Douglas, Jr. (III) B.S. 1951, Queens College	N.Y.
Lolmark, Walter Rolfe (II) B.S. 1951, Tufts College	Mass.	Mivenhimer, H. Robert (II) Modlin, Albert Jay (IV)	Idaho
Loizeaux, Paul Herbert (III) Long, Charles W., Jr. (IV)	Md.	B.S. 1948, M.S. 1949, The George Washington University	D.C.
Lowe, Franklin Gerald (II) A.B. 1951, The George Washington University	Fla.	Morrell, Roger Meurtz (IV) B.S. 1951, Haverford College	Md.
Larus, Angelo G. (I) B.S. 1953, University of Idaho	D.C.	Morrison, Thomas Lloyd (III) Morrison, William Fitzgerald (I)	N.Y.
	Idaho	A.B. 1951, University of Virginia	Mich.
M		Mosley, Everett Cole (I) A.B. 1951, Vanderbilt University	Calif.
Macaulay, Robert Joseph (II) A.B. 1952, Georgetown University	Cuba	Mueller, Stanley Adolph Julius, Jr. (II) A.B. 1952, University of California	Ohio
Machle, Willard (IV) A.B. 1950, Harvard University	Fla.	Murphy, William Raymond, Jr. (III) B.S. 1949, University of Akron	Calif.
Macon, Edward Malcolm (III) B.S. 1951, The George Washington University	Va.	Mutz, Sterling Burr (II) N	
Mahaney, John Gage (IV) B.S. 1949, Michigan State College	Mich.	Nahmias, Andre Joseph (I) A.B. 1950, A.M. 1952, University of Texas	Mich.
Mahaney, Robert Cornelius (II) B.S. 1952, Michigan State College	Mich.	M.P.H. 1951, University of Michigan	D.C.
Marcella, Lawrence Charles (III) B.S. 1951, Pennsylvania State College	Pa.	Negulescu, Paul (III) B.S. 1951, The George Washington University	Idaho
Marquis, James Ralph (II) A.B. 1952, Carleton College	N.J.	Nixon, Charles Richard (I) B.S. 1950, Idaho State College	Md.
Marquis, John William (IV) A.B. 1950, Carleton College	N.J.	North, Elmer Ford (II) A.B. 1952, Stanford University	N.M.
Martin, John Oliver (III) A.B. 1951, Washington and Lee University	Va.	Norton, Robert Keel (I) O	D.C.
Martin, John Peter (III) A.B. 1952, The George Washington University	D.C.	Oartel, Ruth Anne (IV) B.S. 1952, University of Maryland	Calif.
Martin, Robert Carl (IV) A.B. 1950, University of California	Calif.	Oason, Ray Andrew (II) O'Rourke, Franklin Senall (III)	N.J.
Mason, Lyman Gates (III) Mate, Frank, Jr. (II)	D.C.	A.B. 1950, Lafayette College	
A.B. 1951, Dartmouth College	D.C.	P	Md.
Mattucci, Robert John (II) Mark, Merion Harold (I)	N.J.	Palmer, Barber Clayton, Jr. (IV) A.B. 1950, Dartmouth College	D.C.
A.B. 1952, Pacific Union College	Calif.	Pappas, Stephen S. (II) B.S. 1952, The George Washington University	Md.
Mazero, John Robert (IV) A.B. 1951, The George Washington University	Pa.	Parkinson, Roger West (IV) B.S. 1951, Benjamin Young University	Calif.
McCorkle, Henry Leonard (I) A.B. 1950, University of Texas	Md.	Parmeter, Benjamin David (I) Paxson, Leonard Daniel (I)	N.Y.
A.M. 1951, The George Washington University		B.S. 1953, The George Washington University	Mo.
McCune, Frederick Kenneth (III) B.S. 1951, George City College	Pa.	Pauls, John Frederick (IV) Pence, Richard Livingston (II)	Va.
McGrew, Clinton Jackson, Jr. (III) A.B. 1952, The George Washington University	Va.	A.B. 1951, The George Washington University	Fla.
McKinney, Garland Young, Jr. (III) B.S. 1952, University of Oklahoma	Okla.	Perrard, Matthew James (III) A.B. 1951, Harvard University	Ill.
McMurry, Reginald Paul (II) A.B. 1952, Bowdoin College	Maine	Peterson, Charles Raymond (III) Peterson, Douglas Harold (I)	D.C.
McNash, James Nelson (I) A.B. 1951, West Virginia University	W.Va.	A.B. 1952, Ohio University Phillips, Robert Dean (II) B.S. 1952, Howard College	Ala.

Maize, Leonard Irwin (I)	N.Y.	Simmons, Boyd K. (IV)	Idaho
A.B. 1951, Harvard University		A.B. 1955, Brigham Young University	
Pratt, Curtis Robert (III)	Ill.	Singer, Lawrence Robert (IV)	D.C.
A.B. 1951, The George Washington University		B.S. 1950, The George Washington University	
Protonotarios, Stylianos Demetrios (I)	Greece	Slack, Richard Lee (IV)	Va.
B.S. 1951, Wagner College		B.S. 1950, West Virginia Wesleyan College	
A.M. 1951, The George Washington University		Smith, Mansfield Perry Williams (II)	Calif.
		Smith, Ronald Walter (I)	Md.
R		B.S. 1953, University of Maryland	Conn.
Raymond, Mark Bradford (II)	Md.	Snyder, David Dean (II)	
B.S. 1951, University of Maryland		B.S. 1952, Northwestern University	Fla.
Raymond, Roberto Liberal (I)	Iraq	Spangler, Ronald Lee Jr. (II)	
B.S. 1953, University of Scranton		A.B. 1952, Duke University	Pa.
Reby, Henry Harold, Jr. (II)	Calif.	Sperring, Thomas Andrew (II)	
Reisman, Robert Stephen (III)	N.J.	B.S. 1952, University of Pittsburgh	Pa.
B.S. 1951, The George Washington University		Stachowiak, Edward Joseph (IV)	
Rhame, Richard Coleman (IV)	N.Y.	B.S. 1951, University of Pittsburgh	N.Y.
A.B. 1950, Princeton University		Stein, Philip (I)	
Rivara, John Charles (II)	Pa.	A.B. 1951, Brooklyn College	W.Va.
B.S. 1952, St. Francis College		Stine, Oscar Cabren (IV)	
Ron, Richard Budge (II)	Md.	A.B. 1950, Oberlin College	Va.
A.B. 1952, University of California at Los Angeles		Suth, James Loran (II)	
Richardson, James Augustine (III)	Va.	A.B. 1951, The George Washington University	Okla.
A.B. 1951, The George Washington University		Stone, Rodney Alan (IV)	
Ridman, Donald William (II)	Canada	B.S. 1950, University of Tulsa	Wis.
B.S. 1951, Villanova College		Stoneman, James Russell (IV)	Utah
Rivara, George Leonard (II)	N.J.	Sutton, Spaulding Ray (II)	Md.
A.B. 1952, Syracuse University		Sutton, Harold George, Jr. (III)	
Robinson, Guy Harold, Jr. (III)	N.Y.	A.B. 1951, Amherst College	Va.
A.B. 1952, The George Washington University		Swope, Edward Charles (IV)	
Robinson, Tom Witten (IV)	Md.	A.B. 1952, The George Washington University	Maine
A.B. 1949, Oberlin College		Sweet, William Edward (IV)	
Robinson, Thomas Bondi (III)	Calif.	A.B. 1950, Bowdoin College	
A.B. 1942, Brown University			
J.D. 1948, The George Washington University	D.C.	T	
Rosen, Richard James (III)	N.Y.	Tart, Nelson Monroe (III)	N.C.
A.B. 1951, University of California	Calif.	B.S. 1949, Wake Forest College	
		Taylor, Herbert Bradley (IV)	Va.
S		B.S. 1950, The George Washington University	
Sanders, Leslie Elwood (IV)	D.C.	Thomas, James Blake (II)	Ind.
A.B. 1949, Franklin College		A.B. 1947, Wake Forest College	Calif.
Sanderson, Victor (II)	D.C.	Thurkelson, John Milton (IV)	
A.B. 1942, New York University		A.B. 1942, San Diego State College	Va.
M.S. 1944, Oregon State College	D.C.	Tucker, Howard Edwin (IV)	
M.D. 1948, California Institute of Technology		A.B. 1949, The George Washington University	D.C.
Sanderson, Daniel Lamont (IV)	D.C.	Tedemann, John George (I)	Fla.
A.B. 1951, The George Washington University		A.B. 1951, The George Washington University	
Sanderson, John Ernest (IV)	Iowa	Tedemann, Newton Theodore (II)	Ohio
B.D. 1945, Wartburg College		B.S. 1951, Duke University	
Sanderson, George Fleming (I)	D.C.	Todd, Harold Arthur (IV)	Calif.
A.B. 1951, The George Washington University		B.S. 1950, University of Cincinnati	
Sanderson, Roger Hall (II)	N.I.	Thurmer, Jared Homer (I)	
A.B. 1951, Dartmouth College		A.B. 1951, Wake Forest College	
Sanderson, Albert Leaver II (II)	Pa.		
B.S. 1952, Franklin and Marshall College		V	
Sanderson, Charles Utley (III)	Va.	Vande Caste, Francis Rene (I)	Calif.
B.S. 1952, Western Reserve University	Ohio	Vander Heide, Leo Bryant (III)	Md.
		B.S. 1951, American University	Fla.
		Vander Zant, Richard Dewitt (II)	Puerto Rico
		Vanderzant, Louis Benjamin (II)	
		B.S. 1952, Maryland College	Norway
		Vere, Russell Russell (I)	
		B.S. 1951, American University	Ill.
		Viren, Fred Kenneth (III)	

W		
Wall, Samuel (IV)	Calif.	Woodson, Joseph Bernd (I)
B.S. 1950, Whitworth College		B.S. 1944, Swarthmore College
Wang, Chung Chiang (I)	N.Y.	Woody, Ronald Harlan (I)
B.S. 1952, Iowa State College		
Wansor, Richard C. (II)	Pa.	Y
Warrick, Louis Frederick, Jr. (I)	Md.	Yanowitz, Gilbert Herbert (II)
Wechsler, Harold Herbert (I)	N.Y.	B.S. 1952, College of the City of
B.S. 1955, Tufts College		New York
Weeks, James Hubbard (II)	Mass.	Yoder, Paul Timothy (III)
B.S. 1952, University of Massachusetts		B.S. 1950, Eastern Mennonite College
Wellwood, Robert Edward (IV)	N.J.	Young, Vernon Cole (III)
A.B. 1950, Columbia University		Youngblood, Edward W. (IV)
White, George Erhardt (I)	Md.	A.B. 1950, The George Washington
Whitlock, Charles Burtin (IV)	N.J.	University
Wiczer, Donald Wallis (I)	D.C.	Yut, Joseph Peter (I)
Wilhelm, Harry Wesley (II)	D.C.	
B.S. 1952, The George Washington		Z
University		
Wilkes, John Daniel (II)	Wash.	Zahn, Robert Lloyd (I)
Williams, Kathryn Anne (II)	Pa.	B.S. 1950, Missouri Valley College
B.S. 1955, University of Pittsburgh		Zatoff, Lawrence Irving (II)
Williams, Robert Edwin (II)	D.C.	Ziehl, Roland Charles (I)
Wilson, Jack Herbert (IV)	Colo.	B.S. 1955, The George Washington
A.B. 1950, University of Oklahoma		University
Womble, William Lanaden (III)	Fla.	Zouras, Nicholas Louis (I)
B.S. 1951, Duke University		B.S. 1955, Georgetown University

D.C.

Va

N.Y.

Del.

Utah

N.J.

Pa

Mo

D.C.

Wn.

D.C.

SUMMARIES OF REGISTRATION

1953-54

NUMBER OF REGISTRANTS

Class entering September 1953.....	100
Class entering September 1952.....	90
Class entering September 1951.....	81
Class entering September 1950.....	78
Total.....	349

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama.....	1	North Carolina.....	2
Arizona.....	4	Ohio.....	8
California.....	40	Oklahoma.....	2
Colorado.....	2	Oregon.....	1
Connecticut.....	5	Pennsylvania.....	22
District of Columbia.....	1	Utah.....	6
Florida.....	64	Virginia.....	31
Idaho.....	11	Washington.....	3
Illinois.....	8	West Virginia.....	2
Indiana.....	6	Wisconsin.....	8
Iowa.....	2	Canada.....	1
Kansas.....	1	China.....	1
Kentucky.....	1	Cuba.....	1
Maine.....	2	Greece.....	1
Maryland.....	2	Guatemala.....	1
Massachusetts.....	46	Hawaii.....	1
Michigan.....	2	Iran.....	1
Mississippi.....	3	Iraq.....	1
Missouri.....	3	Lebanon.....	1
Montana.....	2	Norway.....	1
New Jersey.....	2	Puerto Rico.....	3
New Mexico.....	17		
New York.....	2		
	24	Total.....	349

GRADUATES OF COLLEGES REGISTERED IN THE SCHOOL OF MEDICINE

Akron, University of.....	1	California, Institute of Technology.....	1
American University.....	1	California, University of.....	11
Amherst College.....	4	California, University of, at Los Angeles.....	1
Arizona State College (Tempe).....	1	Carleton College.....	4
Babson College.....	2	Carnegie College.....	1
Brigham Young University.....	6	Catholic University of America.....	2
Brown College.....	1	Cincinnati, University of.....	1
Brown University.....	2		

Citadel	1	Park College	1
Columbia University	1	Pennsylvania State College	2
Concordia Seminary	1	Pennsylvania, University of	1
Dartmouth College	5	Philadelphia College of Pharmacy	1
Dayton, University of	1	and Science	4
Denver, University of	1	Pittsburgh, University of	1
Duke University	10	Princeton University	2
Eastern Mennonite College	1	Queens College	1
Florida, University of	1	Rensselaer Polytechnic Institute	1
Franklin College	1	Roanoke College	2
Franklin and Marshall College	6	Rutgers University	1
Georgetown University	5	St. Francis College	1
George Washington University, The	68	St. Peter's College	2
Gettysburg College	1	San Diego State College	1
Grove City College	2	San Jose State College	1
Harvard University	8	Scranton, University of	1
Haverford College	2	Southern California, University of	7
Hawaii, University of	1	Standard University	2
Holy Cross, College of the	1	Swarthmore College	1
Howard College	2	Sweet Briar College	4
Howard University	1	Syracuse University	4
Humboldt State College	1	Texas, University of	2
Idaho State College	2	Tufts College	1
Idaho, University of	2	Tulsa, University of	2
Indiana University	1	Union College	1
Iowa State College	1	Vanderbilt University	1
Johns Hopkins University	2	Villanova College	1
Lafayette College	5	Virginia, University of	1
Lehigh University	1	Wabash College	1
Maryland, University of	8	Wagner College	1
Massachusetts, University of	1	Wake Forest College	1
McGill University	2	Warburg College	1
Miami, University of	1	Warburg Theological Seminary	1
Michigan State College	2	Washington and Jefferson College	1
Michigan, University of	2	Washington and Lee University	1
Missouri, University of	1	Washington, State College of	2
Missouri Valley College	1	Washington, University of	1
Montana State University	2	Wellesley College	1
Mount Union College	1	Wells College	1
Muldenberg College	2	Western Maryland College	3
Muskingum College	1	Western Reserve University	2
New Rochelle, College of	1	West Virginia University	1
New York University	4	West Virginia Wesleyan College	1
New York, College of the City of	1	Wheaton College	2
North Carolina, University of	1	Whitier College	1
Northwestern University	1	Whitworth College	5
Oberlin College	2	Wisconsin, University of	2
Occidental College	2	Yale University	1
Ohio University	1	Yankton College	1
Ohio Wesleyan University	1		
Oklahoma, University of	2		
Oregon State College	1		
Pacific Union College	1		

Number of College Graduates 260
Number of Colleges Represented 116

THE LAW SCHOOL
1954-55



THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

VOL. LIII

No. 2

THE LAW SCHOOL

WASHINGTON, D. C.

PUBLISHED IN FEBRUARY
MCMLIV

BY THE UNIVERSITY

THE
GEOGRAPHICAL
MAGAZINE
AND
ANNALS OF TRAVEL

Vol. 1

1791

London

Printed by J. DODD, in Pall-mall

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CALENDAR

1954-55

Date	Day	Occasion
1954		
FALL TERM:		
Sept. 22-24.....	Wednesday through Friday	Registration
Sept. 27.....	Monday	Fall term begins
Nov. 11.....	Thursday	Fall Convocation. Holiday
Nov. 25-27.....	Thursday through Saturday	Thanksgiving recess
Dec. 20-Jan. 1....	Monday through Saturday	Christmas recess
1955		
Jan. 1.....	Monday	Classes resume
Jan. 7.....	Friday	Last day for receiving dissertations of candidates for the degree of Doctor of Juridical Science to be conferred the following June
Jan. 23-Feb. 1....	Saturday through Tuesday	Fall term examination period
SPRING TERM:		
Feb. 3 and 4....	Thursday and Friday.	Registration
Feb. 7.....	Monday	Spring term begins
Feb. 22.....	Tuesday	Winter Convocation. Holiday
April 8-13.....	Friday through Wednesday	Easter recess
May 21-31.....	Saturday through Tuesday	Spring term examination period
June 5.....	Sunday	Baccalaureate Sermon
June 8.....	Wednesday	Commencement
SUMMER TERM *:		

* Dates to be announced.

THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

Robert Vedder Fleming, LL.D., *Chairman*

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Gilbert Grosvenor, A.M., LL.D., Litt.D., Sc.D.

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Alfred Henry Lawson, LL.B.

John Keown McKee

Benjamin Mosby McKelway

*Helen Newman, LL.M.

Donald D'Arcy Shepard, LL.B.

Charles Hook Tompkins, D.Eng.

Walter Rupert Tuckerman, A.B., LL.B., LL.D.

James Edwin Webb, A.B.

Alexander Wetmore, Ph.D., Sc.D.

*Charles Stanley White, M.D., Sc.D.

Lloyd Bennett Wilson

* Nominated by the alumni.

OFFICERS OF ADMINISTRATION

THE UNIVERSITY

Cloyd Heck Marvin, Ph.D., LL.D., *President of the University*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Dean of Faculties*
Myrna Pauline Sedgwick, A.B., *Administrative Secretary*
Henry William Herzog, B.S., *Treasurer*
Harold Griffith Sutton, M.S., *Director of Admissions*
Fred Everett Nessell, A.B., *Registrar; Secretary of the Faculties*
John Russell Mason, B.S. in L.S., A.M., *Librarian; Curator of Art*
Claud Max Farrington, A.M., *Director of Activities for Men*
Virginia Randolph Kirkbride, A.M., *Director of Activities for Women*
Alan Thomas Deibert, A.M., *Adviser to Students from Foreign Countries*
Burnice Herman Jarman, A.M., Ed.D., *Director of the Summer Sessions*
Daniel LeRay Borden, A.M., M.D., *Director of Health Administration*
Don Carlos Faith, Ph.D., *Director of Veterans Education*
Carl Swyter, B.S. in E.E., *Director of Air Sciences*
Benjamin Douglass Van Evera, Ph.D., *Coordinator of Scientific Activities*
_____, *Director of Religious Activities*

THE LAW SCHOOL

John Theodore Fey, LL.B., M.B.A., J.S.D., *Dean of the Law School*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
David Benson Weaver, A.B., LL.B., *Director of Continuing Legal Education*

ADMINISTRATIVE ASSISTANTS

Anna Marie Bischoff, A.B., *Recording Secretary of the Law School*
Bertha Margarethe Rothe, A.M., B.S. in L.S., LL.B., *Assistant Librarian in Charge of the Law Library*
Ethel Meloy Schreiner, A.B., *Secretary to the Dean of the Law School*
Carol Orleans Talpers, *Secretary in the Law School*
Margaret Harlan Olsen, *Clerk-Secretary*

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of the Junior College, comprising the work of the freshman and sophomore years; Columbian College, the senior college of liberal arts, which offers work leading to the Bachelor's and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine, Law, Engineering, Pharmacy, Education, and Government; the College of General Studies; the Division of University Students; the Division of Special Students; the Division of Air Science; and the Summer Sessions.

ACADEMIC STATUS

The George Washington University is on the final approved list of the Association of American Universities. This fact not only assures to students the academic standards of this Association, but also is important to those who desire to transfer credits from one institution to another.

The University is also accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools, and is on the approved list of the American Association of University Women. The University is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal

Education and Admissions to the Bar of the American Bar Association.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Within a few blocks are the buildings housing the offices of many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor. Also readily accessible are the Capitol, the Library of Congress, the National Archives, the Supreme Court, and other federal courts.

THE LAW SCHOOL

THE LAW SCHOOL

THE FACULTY AND STAFF OF INSTRUCTION*

CLOYD HECK MARVIN, Ph.D., LL.D., *President of the University*
 OSWALD SYMISTER COLCLOUGH, B.S., LL.B., LL.D., *Dean of Faculties*
 JOHN THEODORE FEY, LL.B., M.B.A., J.S.D., *Dean of the Law School*
 CARVILLE DICKINSON BENSON, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
 LOUIS HARKEY MAYO, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
 DAVID BENSON WEAVER, A.B., LL.B., *Director of Continuing Legal Education*

EMERITUS FACULTY

GEORGE BOWDOIN CRAIGHILL
Professor Emeritus of Law
 A.B. 1903, University of the South; LL.B. 1906, Georgetown University.
 GILBERT LEWIS HALL
Professor Emeritus of Law
 A.B. 1899, Swarthmore College; LL.B. 1918, The George Washington University.
 JOHN WILMER LATIMER
Professor Emeritus of Law
 LL.B. 1897, The George Washington University.
 WALTER LEWIS MOLL
Professor Emeritus of Law
 A.B. 1898, Concordia College (Ind.), Graduate 1899, Concordia Theological Seminary (St. Louis), LL.B. 1923, Indiana University; S.J.D. 1924, Harvard University.
 HECTOR GALLOWAY SPAULDING
Professor Emeritus of Law
 B.S. 1900, University of Minnesota; LL.B. 1903, S.J.D. 1924, Harvard University.
 WILLIAM CABELL VAN VLECK
Professor Emeritus of Law
 A.B. 1908, LL.B. 1911, LL.D. 1948, The George Washington University; S.J.D. 1921, Harvard University.

ACTIVE FACULTY

CARVILLE DICKINSON BENSON
Professor of Law; Assistant Dean of the Law School
 A.B. 1920, Johns Hopkins University; LL.B. 1923, S.J.D. 1926, Harvard University.
 JOHN PATRICK BURKE
Associate Professor of Law
 A.B. 1940, LL.B. 1941, The George Washington University.
 OSWALD SYMISTER COLCLOUGH
Professor of Law; Dean of Faculties
 B.S. 1920, United States Naval Academy; LL.B. 1934, The George Washington University; LL.D. 1946, Muhlenberg College.

*The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.

CHARLES SAGER COLLIER*Professor of Law*

A.B. 1911, LL.B. 1915, S.J.D. 1932, Harvard University.

ROBERT MCKINNEY COOPER*Associate Professor of Law*

A.B. 1929, West Virginia University; Ph.D. 1931, University of Wisconsin; J.D. 1934, University of Michigan.

ROGER ALLEN CUNNINGHAM*Assistant Professor of Law*

B.S. 1943, LL.B. 1948, Harvard University.

JOHN JOSEPH CZYZAK*Lecturer in Law*

Ph.D. 1936, A.M. 1939, John Carroll University; LL.B. 1943, Western Reserve University.

JOSEPH DACH*Lecturer in Law*

J.D. 1929, University of Budapest; LL.B. 1945, The George Washington University

JAMES FORRESTER DAVISON*Professor of Law; Editor-in-Chief of the Law Review*

A.B. 1921, LL.B. 1923, Dalhousie University; LL.M. 1924, S.J.D. 1929, Harvard University.

JOSEPH PATRICK DRISCOLL*Lecturer in Law*

A.B. 1940, LL.B. 1943, Harvard University.

JUSTIN LINCOLN EDGERTON*Professorial Lecturer in Law*

A.B. 1920, LL.B. 1931, The George Washington University.

JOHN THEODORE FEY*Associate Professor of Law; Dean of the Law School*

LL.B. 1940, University of Maryland, M.B.A. 1942, Harvard University; J.S.D. 1952, Yale University

WILLIAM THOMAS FRYER*Professor of Law*

A.B. 1922, LL.B. 1924, The George Washington University; J.D. 1925, Yale University

EUGENE WILLIAM GENIESSE*Lecturer in Law*

B.S.E. 1920, M.S. 1924, University of Michigan; LL.B. 1931, The George Washington University.

WILLIAM WOOLCOTT GOODRICH*Lecturer in Law*

LL.B. 1935, University of Texas

LOUIS JAMES HARRIS*Lecturer in Law*

A.B. 1932, Cornell University; LL.B. 1939, S.J.D. 1942, Brooklyn Law School; LL.M. 1948, The George Washington University

CONDER CAYWOOD HENRY*Adjunct Professor of Law*

A.B. 1915, LL.B. 1920, The George Washington University.

PHILIP FIELD HERRICK*Professorial Lecturer in Law*

A.B. 1929, Williams College; LL.B. 1931, LL.M. 1936, The George Washington University

- FRAZER FROST HILDER
Lecturer in Law
A.B. 1934, University of Michigan; J.D. 1940, The George Washington University.
- JOHN WINGFIELD JACKSON
Adjunct Professor of Law
B.S. 1928, University of Pennsylvania; LL.B. 1932, The George Washington University.
- JOHN ALEXANDER KENDRICK
Clerk of the Trial Practice Court
A.B. 1942, LL.B. 1943, The George Washington University.
- JAMES ROBERT KIRKLAND
Adjunct Professor of Law
A.B. 1927, LL.B. 1928, LL.M. 1929, The George Washington University; Judge, United States District Court for the District of Columbia.
- VINCENT KLEINFELD
Lecturer in Law
LL.B. 1929, Columbia University.
- MILTON PAUL KROLL
Lecturer in Law
A.B. 1934, West Virginia University; LL.B. 1937, Harvard University.
- BOLITHA JAMES LAWS
Adjunct Professor of Law
LL.B. 1913, LL.M. 1914, LL.D. 1920, Georgetown University; Chief Judge, United States District Court for the District of Columbia.
- WILLIAM THOMAS MALLISON, JR.
Assistant Professor of Law
A.B. 1940, University of Washington; LL.B. 1948, Vanderbilt University.
- LOUIS HARKEY MAYO
Associate Professor of Law; Assistant Dean of the Law School
B.S. 1920, United States Naval Academy; LL.B. 1949, University of Virginia, J.S.D. 1953, Yale University.
- JOHN ALBERT MCINTIRE
Professorial Lecturer in Law
A.B. 1928, Wittenberg College; LL.B. 1931, University of Cincinnati.
- LEROY SORENSON MERRIFIELD
Associate Professor of Law
A.B. 1938, LL.B. 1941, University of Minnesota, M.P.A. 1942, Harvard University.
- GEORGE EDWARD MONK
Professorial Lecturer in Law
A.B. 1928, LL.B. 1930, LL.M. 1934, The George Washington University.
- JAMES WARD MORRIS
Adjunct Professor of Law
A.B. 1912, University of North Carolina; Judge, United States District Court for the District of Columbia.
- JAMES OLIVER MURDOCK
Professor of Law
Ph.D. 1916, University of Chicago; LL.B. 1924, Harvard University.
- FRANK HAMMETT MYERS
Adjunct Professor of Law
LL.B. 1923, LL.M. 1924, The George Washington University; Judge, Municipal Court of the District of Columbia.

HERMAN ISRAEL ORENTLICHER*Associate Professor of Law*

A.B. 1933, LL.B. 1936, Harvard University.

CHARLES SYLVANUS RHYNE*Professorial Lecturer in Law*

LL.B. 1937, The George Washington University.

DUDLEY GRAHAM SKINKER*Associate Clerk of the Trial Practice Court*

LL.B. 1940, The George Washington University.

DAVID BENSON WEAVER*Associate Professor of Law; Director of Continuing Legal Education*

A.B. 1943, Ohio Wesleyan University; LL.B. 1948, Western Reserve University.

GLEN EARL WESTON*Assistant Professor of Law*

B.S. 1943, University of Maryland; LL.B. 1948, The George Washington University

FREDERICK BERNAYS WIENER*Professorial Lecturer in Law*

Ph.B. 1927, Brown University; LL.B. 1930, Harvard University

CHARLES JAMES ZINN*Lecturer in Law*

A.B. 1927, LL.B. 1930, Fordham University; LL.M. 1951, Georgetown University.

COMMITTEES •**THE DEAN'S COUNCIL**

Charles Sager Collier

Carville Dickinson Benson

James Oliver Murdock

William Thomas Fryer
James Forrester Davison
Robert McKinney Cooper

Leroy Sorenson Merrifield

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COMMITTEE ON SCHOLARSHIPHerman Israel Orentlicher, *Chairman*

Carville Dickinson Benson

Louis Harkey Mayo

* The President of the University, the Dean of Faculties of the University, and the Dean and Assistant Deans of the Law School are members ex officio of all committees.

COMMITTEE ON CURRICULUM

Leroy Sorenson Merrifield, *Chairman*

Herman Israel Orentlicher

Roger Allen Cunningham

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James Oliver Murdock, *Chairman*

David Benson Weaver

Glen Earl Weston

GENERAL INFORMATION

LOCATION IN THE NATION'S CAPITAL

The George Washington University Law School, now in its 89th year, is the oldest law school in the District of Columbia. The School took part as a charter member in 1900 in the organization of the Association of American Law Schools and it has been an active member of the Association since that time. It is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. Readily accessible are the Supreme Court of the United States, the federal trial and appellate courts of the District of Columbia, and, in addition, federal courts of special jurisdiction, such as the United States Court of Claims, the United States Court of Customs and Patent Appeals, and the Tax Court of the United States. Current federal legislation can be studied as it is considered by Congressional committees and as it comes up for debate on the floor of the House of Representatives and the Senate. It is with respect to the federal administrative agencies that the students here in Washington have matchless opportunities for study and observation. They can attend informal and formal hearings of these agencies and can obtain from the docket sections complete records of administrative adjudication in specific cases. Illustrative of such federal agencies are the Interstate Commerce Commission and the Civil Aeronautics Board in the field of transportation; the Federal Trade Commission in the field of trade regulation; the Securities and Exchange Commission in the field of security issues and corporate finance; the National Labor Relations Board in the field of labor-management relations; the United States Patent Office in the field of patent law; the Federal Power Commission in the field of water, natural gas, and electric power; and the

Federal Communications Commission in the field of radio and television.

Supplementing these environmental advantages of law in action are the exceptional research library collections in the Library of Congress, in the various departments of the Federal Government, and in the libraries of the headquarters of national and international organizations located in Washington. The notable library of the Carnegie Foundation for International Peace has been acquired by The George Washington University for use of research students in international and comparative law, fields with respect to which Washington has come to be called "The Capital of the World".

The years of residence at law school are years of participation in the life of the community, which in the case of the George Washington University Law School, is the government of the United States by law. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School offers: (1) a program of study in preparation for the practice of law; (2) programs of study and research on the graduate level for foreign students as well as for American; (3) a continuing legal education program for members of the bar; (4) institutes and forums on current topics in domestic and foreign law; (5) the publication of a law journal containing the results of research in public law; and (6) the encouragement of student professional co-curricular activities.

PROGRAMS OF STUDY

Traditionally the Law School has been national in the geographic distribution of its students. At the present time, men and women holding baccalaureate degrees from more than three hundred colleges and universities come from the forty-eight states, the territories, and several foreign countries to comprise the student body. As a consequence the programs of study leading to the degrees of Bachelor of Laws and Juris Doctor have been planned to provide instruction and training for the practice of law wherever the Anglo-American legal system obtains.

Graduate work leading to the degrees of Master of Laws and Doctor of Juridical Science is offered for those desiring further study and research in specialized fields of law.

Provision is made for advanced study by members of the bar who do not desire to register as candidates for degrees. Lawyers may take

courses for this purpose either as unclassified graduate students or as continuing legal education students.

Graduate work is offered also to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. There are two courses of study, one leading to the degree of Master of Comparative Law for lawyers planning to return to their own countries, and the other leading to the degree of Master of Comparative Law (American Practice) for lawyers planning to practice in a common law jurisdiction.

FALL, SPRING, AND SUMMER TERMS

Students may enter Law School at the beginning of any of the three terms.

MORNING AND EVENING DIVISIONS

The School maintains morning and evening divisions. The evening division conforms to the same standards as the morning division, including the same teaching staff.

HOURS OF INSTRUCTION

Morning sections: Monday through Friday, 9:10 A.M. to 1:00 P.M.
Trial Practice Court: Saturday, 9:30 to 11:30 A.M.

Evening sections: Monday through Friday, 5:50 to 7:40 P.M.

THE LIBRARY

The Law Library of 35,000 volumes contains the official reports of the decisions of the courts of last resort of all states prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; leading textbooks and treatises; and practically complete sets of about 150 legal periodicals.

The Library, which is on the fourth floor of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

THE LAW REVIEW

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The *Review* organization includes a faculty editor-in-chief, an associate faculty editor, a faculty board of advisory editors, a board of departmental advisory editors, and a board of student editors. The student editors are chosen each year on the basis of scholarship.

THE STUDENT BAR ASSOCIATION

Every student in the Law School is a member of the Student Bar Association. This is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law.

The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

ADMISSION

APPLICATION FOR ADMISSION

The Law School, as other colleges, schools, and divisions of the University, except the Division of Air Science, is coeducational.

An applicant for admission must obtain from the Office of the Director

of Admissions of the University an application blank which he must fill out completely and return with the application fee of \$3.

Two recent photographs with the applicant's signature must accompany the blank.

To insure prompt action, applications should be filed not later than August 1 for the fall term, January 1 for the spring term, and May 1 for the summer term.

Requirements concerning records of higher institutions previously attended are set forth on the sheet attached to the application blank.

Attendance at classes is limited to students registered for credit. "Auditing" classes is not permitted.

REQUIREMENTS FOR ADMISSION

For the Degrees of Bachelor of Laws and Juris Doctor

Bachelor of Laws.—A Bachelor of Arts or equivalent degree awarded upon completion of a four-year course in an approved college or university is required. All pre-legal work must be of a satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

Juris Doctor.—A student does not register as a candidate for this degree until his last year in the Law School. For details, see page 28.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws will be granted only for work successfully completed in other law schools which are members of the Association of American Law Schools.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Advanced standing toward the degree of Juris Doctor will not be granted.

For the Graduate Degrees

Candidates for graduate degrees must be accepted by the Committee on Graduate Studies.

*Master of Laws.**—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained an

* One-half the work necessary for graduation from an approved college or university may be accepted as satisfying the admission requirement for pre-legal work, provided the applicant completed not less than twenty months of continuous service in the armed forces of the United States during World War II and prior to the beginning of the 1948-49 fall term.

average grade on all work done for the Bachelor of Laws degree equivalent to the relative position of a *B* average in the standards of grading at this Law School, except that, at the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative.

Master of Comparative Law and Master of Comparative Law (American Practice).—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students

A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students

A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to register as degree candidates or as unclassified graduate students should file the regular application for admission form.

REGISTRATION

Before attending classes each student must present himself in person for registration. No student will be registered in the Law School until proper credentials have been filed and approved (see "Admission", above).

Registration is for the term or session only.

A late-registration fee of \$5 will be charged each student who is permitted to register after the regular registration days.

Registration may be changed only with the permission of the Dean.

FEES AND FINANCIAL REGULATIONS

Application fee, charged each applicant for admission, non-refundable.....	\$3.00
Tuition fee, for each credit hour for which the student registers.....	17.00
For the degree of Doctor of Juridical Science:	
For work leading to and including the final examinations.....	450.00
Student Bar Association fee, charged each student in the Law School for each term or any part thereof except the summer term.....	2.50
Graduation fee.....	20.00
Fee for printing and filing summary of doctoral dissertation.....	75.00
Fee for special examinations, for each subject.....	5.00
Late-registration fee, charged each student who fails to register within the designated period.....	5.00
Residence fee, charged each candidate for the degree of Doctor of Juridical Science wishing to maintain "in residence" status during any term after completion of tuition requirements.....	17.00
Service fee, charged each student for late payment of tuition, see "Payment of Fees".....	1.00
Reinstatement fee, charged each student who is reinstated after being suspended for delinquency in fees.....	5.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under "Health Administration", pages 26-27. These privileges, however, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each term are due and payable in advance at the time of registration.

Subject to the approval of the Treasurer, a student may sign a contract for term charges, except for fees payable in advance, permitting payments as follows:

Fall Term.—One third at the time of registration; one third on November 3; one third on December 3.

Spring Term.—One third at the time of registration; one third on March 3; one third on April 3.

A student who fails to meet payments when due but who pays his fees on or before the fifteenth of the month in which payment is due is charged a service fee of \$1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of \$5.

A student suspended for failure to meet payments when due may not be reinstated for the term after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

WITHDRAWALS AND REFUNDS

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Term.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Term.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and the course is dropped before the regular registration day. In this case a withdrawal fee of \$5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the term for which a registration charge is incurred and in no case will this payment be credited to another term. Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Withdrawal from a course or from the University between October 31 and the end of the fall term and between February 28 and the end of the spring term is permitted only in exceptional cases.

The grade of *F* (to be counted as zero) will be given in a course dropped without the approval of the Dean.

All charges for courses dropped without the approval of the Dean

must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, LOAN FUNDS

Teaching Fellowships.—A limited number of teaching fellowships are available each year to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. The occupant of each of these fellowships follows an approved program of study and research, assists members of the Faculty in the guidance of first year students, and supervises student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Law School not later than March 1 preceding the period for which the fellowship is to be awarded.

Charles Worthington Dorsey Memorial Scholarship.—This scholarship, established in 1947 as a memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82, is awarded upon the recommendation of the Faculty of the Law School to a needy and promising graduate of Columbian College or other division of the University, with a Bachelor of Arts or other equivalent degree, who has maintained an average of B as an undergraduate student and who desires to pursue the study of law as a full-time student. The scholarship covers tuition for the course leading to the first degree from the Law School, Bachelor of Laws or Juris Doctor, provided that the holder maintains an average of B. The right is reserved to suspend the benefits of the scholarship for cause at any time. The scholarship is awarded ordinarily once every three years.

Law School Scholarships.—Seven scholarships are available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-years' tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a B average. Application must be made before February 1 to the Dean of the Law School.

Ellsworth Prize.—The Ellsworth Prize of \$25, established by the late Fritz von Briesen, is awarded to the student doing the best work in the subject of Patent Law Practice.

John Bell Larner Prize.—This prize, established by the bequest of John Bell Larner, consists of a medal which is awarded annually to that member of the graduating class in the Law School who attains the

highest average grade in the entire course for the degrees of Bachelor of Laws or Juris Doctor.

John Ordronaux Prizes.—These prizes were established in 1909 by the bequest of John Ordronaux.

The amount of \$75 is awarded annually to the student in the Law School who has attained the highest average grade in the first year, full-time course; and \$75 to the student who has attained the highest average grade in the second-year, full-time course.

Through the generosity of friends of the University a number of loan funds are available to students in the Law School. Among them is the Henry Strong-William A. Maury Loan Fund established by the Henry Strong Educational Foundation in memory of Henry Strong and William A. Maury. Application for loans should be made to the Treasurer of the University.

REGULATIONS

Students in the Law School are subject to, and are expected to familiarize themselves with, the general University regulations stated in the University Catalogue.

AMOUNT OF WORK

Students without substantial outside employment may take a program of studies of fourteen hours a week in which the majority of credit hours must be in the morning sections. Students, whether in the morning or evening division, with substantial outside employment must take a limited program of studies not exceeding ten hours a week. Students taking a majority of their classes in the evening may not take more than ten hours a week. A minimum schedule of ten hours in the morning division and six hours in the evening division is required except in exceptional circumstances when authorized by the Dean.

ATTENDANCE

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may, by action of the Faculty, be barred from taking the examination.

Attendance at classes is limited to students registered to take them for credit. "Auditing" classes is not permitted.

RESIDENCE REQUIREMENTS

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the morning division for the fall and spring terms constitutes residence for an academic

year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a morning student must attend six terms to meet residence requirements; an evening student must attend eight. Students authorized to take schedules of less than ten hours in the morning division in any particular term, or less than six hours in the evening division, receive residence credit on a proportional basis. Students who attend the summer term receive fractional residence credit.

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

A student admitted with advanced standing must complete one academic year of residence and pass twenty-eight credit hours with an average of at least *C* in order to qualify for the degree of Bachelor of Laws.

GRADUATION REQUIREMENTS

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last term of the senior or final year.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

EXAMINATIONS

Written examinations are held at the end of each course. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. A grade of *NG* (no grade) will be entered on the record of a student thus excused, and he may take the next regularly scheduled examination in the course for which the excuse has been granted.

No special examinations will be given; except that, upon written application to the Dean, showing sufficient cause, a candidate for a degree at a convocation before the next regular examination, if he would be entitled to take a postponed examination, may, at the discretion of the Faculty, be given a special examination.

If a student fails to take an examination, a grade of *F* (to be counted as zero) will be recorded, unless the student has obtained the Dean's permission to drop the course according to regulations stated on page 20 or to be excused from the examination.

GRADES

Grades are indicated by the letters *A*, excellent, 85-100; *B*, good, 75-84; *C*, satisfactory, 65-74; *D*, poor, 55-64—below standard for graduation; *F*, failed—below 55; and *NG*, no grade—student excused from failure to take regularly scheduled examination. See "Examinations" above, for grade upon failure to take an examination. The grades *A*, *B*, *C*, and *D* mean that the work has been completed and credit given for the courses. *F*, failed, means that no credit will be given. To obtain credit the student must repeat the course; but a student who has obtained an average of *C* in the work of the term just completed and the preceding term and received a grade of *F* in only one course during those terms may take the next regular examination in that course, or a special examination at the end of the next term if he is a candidate for a degree at a convocation before the next regular examination. If on such reexamination he receives a passing grade he will be given credit in the course. Both grades are recorded.

EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—

A student who in one term, or two successive terms, fails in courses aggregating eight or more credit hours will be excluded, except that if currently registered he will be permitted to complete the work of the term. Such a student is not eligible thereafter to be registered in the Law School or to attend classes. While excluded he may, however, with the consent of the Faculty, be admitted to the regular examinations in those courses in which he has made a grade below passing, and if he receives a grade of passing in those courses with an average sufficient to make his cumulative average not less than *C*, he will be reinstated.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least *C* will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second term following that in which his average has fallen below *C*, receive grades sufficient to give him a cumulative average of at least *C*, he will be excluded, except that if currently registered he will be permitted to complete the work of the term.

The cumulative average of a student includes all the grades in all the courses taken while he is in the Law School as a candidate for a particular degree. When a course is repeated or a reexamination is taken, both the first grade and the subsequent grade or grades are counted in the cumulative average.

In special cases in which a student who has been excluded can clearly

demonstrate that he has the capacity to pursue the study of law with a definite likelihood of success, his low grades being due to special circumstances beyond his control, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the term for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the term for which he is currently registered.

CLASSIFICATION OF STUDENTS

Students are divided into classes on the completion of credit hours as follows: first year, one through twenty-eight; second year, twenty-nine through fifty-six; third year, fifty-seven or more.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

RIGHT TO DROP STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

STUDENT LIFE

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at \$35 a month and double rooms at \$30 a month a person. Meals are served at the Student Union. Applications for rooms should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for six or more credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission

be granted for such girls to live in apartments, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for \$24 a month a person. Dining facilities are available to all residents. Meals are also served at the Student Union. Application forms for room reservation may be obtained from the Director of Activities for Men, Building R, 2027 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office. The reservation of rooms in private houses must be made by students.

PLACEMENT OFFICE

The University Placement Office, 2114 G Street NW., provides assistance to students seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has,

by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each term; (5) the above regulations apply also during the summer term of the University.

The University is not responsible for injuries received in inter-collegiate or intra-mural games, or in any of the activities of the departments of physical education.

PLACEMENT SERVICE FOR GRADUATES

The Law School takes a continuing interest in the placement of its graduates and maintains a placement service for that purpose. The Dean, the Faculty, and the University Placement Office cooperate in collecting information from alumni of the Law School, law firms, and government agencies concerning opportunities for legal positions throughout the country. Students and recent graduates are invited to discuss their placement problems with the Assistant Dean in charge of placement.

THE DEGREES OF BACHELOR OF LAWS AND JURIS DOCTOR

The programs of study leading to the degrees of Bachelor of Laws and Juris Doctor are addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. They include, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the technique of their use. These programs include the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial practice; and, through the medium of seminars, experience in group handling of legal problems.

REQUIREMENTS FOR THE DEGREES

BACHELOR OF LAWS

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and eighty credit hours, with a cumulative average of at least *C*.

JURIS DOCTOR

The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at the George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students) in the Law School; (2) eighty credit hours with a cumulative average of at least *B* including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty.

HONORS

The degree of Bachelor of Laws or of Juris Doctor "with distinction" will be awarded students who obtain a cumulative average of *A*.

CURRICULUM

Required and Elective Courses.—A program of required and elective courses has been developed in order to assure coverage of the basic courses as well as to allow a degree of flexibility to meet the diverse interests of students. All first-year courses, three second-year courses, and one third-year course are required, leaving a total of thirty-six hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law.

Practice and Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Torts II—Unfair Trade Practices; Substan-

tive Patent Law, Patent Office Practice, Patent Trial Practice Court, Federal Anti-Trust Laws, and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall term. Adjustments are made to meet the needs of students beginning in the spring and summer terms.

Morning Division

FIRST YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Legal Method and Legal System..	4	Real Property	4
Contracts	4	Contracts	2
Personal Property	2	Torts I	4
Criminal Law	4	Constitutional Law	4
Total	14	Total	14

SECOND YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Civil Procedure	4	Evidence	4
Conveyances and Wills	2	Conveyances and Wills (concluded) ..	2
Electives	8	Electives	8
Total	14	Total	14

THIRD YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	10	Electives	10
Total	12	Total	12

Evening Division

FIRST YEAR

FALL TERM		SPRING TERM	
	Credit Hours		Credit Hours
Legal Method and Legal System..	4	Torts	4
Contracts	4	Contracts	2
Personal Property	2	Criminal Law	4
Total	10	Total	10

SECOND YEAR

FALL TERM		Credit Hours	SPRING TERM		Credit Hours
Real Property	4		Constitutional Law	4	
Civil Procedure	4		Evidence	4	
Conveyances and Wills	2		Conveyances and Wills (concluded)	2	
Total	10		Total	10	

THIRD YEAR

FALL TERM		Credit Hours	SPRING TERM		Credit Hours
Electives	10		Electives	10	
Total	10		Total	10	

FOURTH YEAR

FALL TERM		Credit Hours	SPRING TERM		Credit Hours
Trial Practice Court	2		Trial Practice Court	2	
Electives	8		Electives	8	
Total	10		Total	10	

GRADUATE PROGRAM

DEGREES OF MASTER OF LAWS AND DOCTOR OF JURIDICAL SCIENCE

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study in order to broaden and deepen their understanding of the law. Others desire to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, is therefore offered to enable qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as morning students in order that lawyers in private practice and in government service may engage in advanced study or in original research.

PROGRAMS OF STUDY FOR FOREIGN LAWYERS

Two programs of study are provided to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. For such lawyers, whose aim is to acquire an understanding of our system so that they may work intelligently with its materials and

practitioners after returning to their own countries, there is available the degree of Master of Comparative Law. For foreign lawyers, however, who wish to practice in a common law jurisdiction there is available the degree of Master of Comparative Law (American Practice) with an appropriate program of study. With respect to both programs, the students are not assigned to special classes but work in association with the other students in the regular courses, each student's program being adapted to his individual needs.

NON-DEGREE STUDY: CONTINUING LEGAL EDUCATION

As a result of changes and expansion in various fields of the law many lawyers pursue graduate study in order to keep abreast of current developments. Consequently, an important part of the graduate program is to provide for members of the bar not desirous of becoming degree candidates. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as continuing legal education students.

RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party, and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for the graduate degrees in the Law School and specially qualified seniors may pursue this work.

REQUIREMENTS FOR THE DEGREES

MASTER OF LAWS

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two terms. Such residence should normally be continuous. All requirements for the degree must be completed in this Law School and in a period not exceeding two years after registration for work for the degree. The student must have completed with a minimum average of *B* twenty credit hours in courses listed in the law curriculum as graduate courses except that in appropriate cases third-year courses may be approved for inclusion in the program of study if not previously taken.

MASTER OF COMPARATIVE LAW

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily twenty-four credit hours in approved courses in the curriculum of the Law School or of such other departments of the University as the Faculty of the Law School shall approve.

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

The degree of Master of Comparative Law, American Practice (M.Comp.L.(Am.Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed twenty-eight credit hours in approved courses in the curriculum of the Law School with a cumulative average of at least C.

DOCTOR OF JURIDICAL SCIENCE

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Committee on Graduate Studies. At the conclusion of his first year of residence, or at such other time as the Committee on Graduate Studies may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination shall be conducted by the consultative committee and such other members of the Faculty and qualified experts from other research institutions as may be selected by the Committee on Graduate Studies.

Not later than the date specified in the University calendar the candidate must submit to the Dean one typewritten original and two legible and complete carbon copies of his dissertation in its final form. The dissertation must contain a summary of from 2,500 to 3,000 words inserted as an appendix. An additional original typewritten copy of this summary must be submitted for publication. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Chairman of the Committee on Graduate Studies.

The summaries of accepted dissertations will be printed in a volume forming a number of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

The courses of instruction listed below are subject to change. The University reserves the right to withdraw any course announced.

The number which precedes the name of a course indicates the term in which that course is offered. An odd number indicates that the course is offered in the fall term; an even number, that it is offered in the spring term; and a double number (e.g., 241-42), that it begins in the fall and continues in the spring term. The letter "x" following an odd course number (e.g., 141x) indicates that the course, normally offered in the fall term, is given in the spring term. The letter "x" following an even course number (e.g., 112x) indicates that the course, normally offered in the spring term, is given in the fall term.

First-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

The number of hours of credit given for the satisfactory completion of a course is indicated in parenthesis after the name of the course. Thus, a year course giving two hours of credit each term is marked (2-2), and a term course giving two hours of credit is marked (2).

Morning classes begin at 9:10 A.M. Evening classes begin at 5:50 P.M.

FIRST YEAR

101 *Legal Method and Legal System* (4)

Fryer, Benson, Davison,
Burke, Orentlicher, Weston

Introduction to study of substantive and procedural law dealing with basic concepts. Training in method and technique of case law, based upon modern records in state and federal cases, followed by practice in the use of law books and legal writing. Importance of language in law, legal reasoning, statutory interpretation, and use of precedents, under the doctrines of stare decisis, law of the case, and res judicata. Background development of Anglo-American legal system; organization of the judiciary and the bar, stressing enforcement of ethical standards. Fryer and Benson, *Cases on Legal Method, Cases on Legal System*, 2 vol. ed. 1949. Morning and evening sections. (Also offered 1954 summer term.)

Law 101x, same as 101, offered spring term. Morning and evening sections.

111-12 *Contracts* (4-2)

Mayo

Scope of protection accorded contracts; specific performance of contracts other than land transactions; damages, restitution. Mutual assent: offer and acceptance, misunderstanding, mistake, reformation, parol evidence rule. Consideration, third party beneficiaries, assignments, conditions, Statute of Frauds. Morning and evening sections.

- 123 *Criminal Law and Procedure* (4) Murdock, Cooper
Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. Morning. (Also offered 1954 summer term.)
Law 123x, same as 123, offered spring term. Evening.
- 133 *Personal Property* (2) Fryer, Mallison
Concepts of property and ownership; possession; finding; bailment; liens and pledges; acquisition of title by bona fide purchase, adverse possession, accession, confusion, judgment, satisfaction of a judgment, and gift. Morning and evening sections.
Law 133x, same as 133, offered spring term. Evening.
- 138 *Real Property* (4) Benson, Cunningham
Historical background of the law of estates and conveyances; adverse possession; possessory estates; concurrent estates; easements, profits, covenants, and equitable servitudes; natural rights. Morning. (Also offered 1954 summer term.)
Law 138x, same as 138, offered fall term. Evening.
- 142 *Torts I* (4) Merrifield
Intended and unintended interference with the person or tangible things, defamation of the person, malicious prosecution. Morning and evening sections.
- 150 *Constitutional Law* (4) Collier, Mallison
Historical introduction, judicial approach and methods, doctrine of the separation of powers, powers of the National Government; the federal system and relation of federal and state courts. Morning and evening sections.

SECOND YEAR

- 205 *Civil Procedure* (4) Burke
Function and composition of pleadings, including their relation to proof. Emphasis is upon reforms, as exemplified by modern code provisions and the Federal Rules of Civil Procedure. Morning and evening sections. (Also offered 1954 summer term.)
- 208 *Evidence* (4) Fryer, Weston
Functions of court and jury; witnesses; hearsay, opinion, and circumstantial evidence; proof of authenticity and contents of writings. Morning and evening sections. (Also offered 1954 summer term.)
- 209-10 *Conveyances and Wills* (2-2) Cunningham
Land contracts, conveyances, mortgages, recording; formation and revocation of wills, testate and intestate succession. Morning and evening sections. (Also offered 1954 summer term.)
- 214 *Legal Accounting* (2)
A study of elementary accounting principles and techniques; application of accounting principles to legal problems. Morning and evening sections.

- 218 *Local Government Law* (2) Mallison
Types and objectives of municipal, county, and special purpose local governmental units; intergovernmental relations; original organization and changes; lawmaking by local bodies; community planning and development; legal responsibility of local governmental units.
Summer term 1954.
- 223 *Domestic Relations* (2) Mallison
Marriage, annulment, and divorce; rights of husband and wife; rights of parent and child; infants. Morning and evening sections. (Also offered 1954 summer term.)
- 247 *Commercial Paper* (4) Orentlicher
Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law. Morning and evening sections.
- 258 *Commercial Transactions* (4) Orentlicher
The law relating to the sale and distribution of goods, and to the security financing devices utilized in this connection, with particular attention to the effect of uniform laws. Morning and evening sections.
- 261 *Agency-Partnership* (4) Cooper
Master and servant (status of agent), respondeat superior, nature of agency relation; actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification. Formation of partnerships, partnership property, rights and duties of partners inter se, nature and enforcement of the partnership obligation, dissolution of the partnership, actions by and against partners. Morning and evening sections.
- 270 *Corporations* (4) Davison, Weaver
Legal requirements as to contributions of capital; powers and rights of corporations, corporate officials, and shareholders. Morning and evening sections. (Also offered 1954 summer term.)

THIRD YEAR

- 303 *Administrative Law* (4) Davison
The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. Davison and Grundstein, *Cases on Administrative Law*. Evening.
Law 303x, same as 303, offered spring term. Morning.
- 309x *Suretyship* (2) Orentlicher
The law of suretyship, especially in the context of accommodation credit and commercial and financial practices, with attention also to informal and non-consensual suretyship relations and the place of suretyship principles in the solution of legal problems generally. Evening.

- 312 *Restitution* (2) Burke, Orentlicher
Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment. Morning. (Also offered 1954 summer term.)
Law 312x, same as 312, offered fall term. Evening.
- 315x *Conflict of Laws* (4) Collier
Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations. Morning and evening sections. (Also offered 1954 summer term.)
- 317 *Creditors' Rights* (4) Cunningham
Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration. (Not offered in 1954-55.)
- 321-22 *Current Decisions* (2-2) Davison, Weston
Required of, and limited to, members of the student staff of the *Law Review*. Time to be arranged.
- 324 *Federal Jurisdiction* (2) Cooper
Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts. McCormick and Chadbourn, *Cases on Federal Courts*. Morning.
Law 324x, same as 324, offered fall term. Evening.
- 326 *Insurance* (2) Evening.
The insurance device in life, property, and other risks.
- 327x *International Law* (4) Murdock
Origin, nature, sources, and authority; the international community, recognition, organization (the United Nations); nationality, territory, jurisdiction; treaties; diplomatic and consular agents; state responsibility and international claims; pacific settlement of disputes. Morning and evening sections.
- 329 *Labor Law* (4) Merrifield
Laws applicable to strikes, picketing, boycotts, etc.; organization and representation of employees; negotiation of collective bargaining contracts; inter-union and intra-union relations; settlement of wage disputes (arbitration, mediation, conciliation). Cases, legislative and administrative materials, readings. Morning and evening sections.
- 331 *Labor Law Practice* (2) Merrifield
The role of the lawyer in the negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration and under federal labor legislation, such as the Labor Management Relations Act and the Fair Labor Standards Act.
Summer Term 1954.

333 Legislation (4)

Mallison

The legislative process, with particular emphasis on its operation in the federal and state governments; legislative organization and procedure; kinds of statutes; statutory interpretation. Morning.

335-36 Trial Practice Court (2-2)

Laws, Morris, Kirkland, Edgerton, Myers, Jackson, Herrick, Monk, Kendrick, Skinker

Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.

To be taken in the senior year. Prerequisite: Law 205 and 208. Morning and evening sections.

337 Future Interests (2)

Benson

Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities. Morning. (Also offered 1954 summer term.)

Law 337x, same as 337, offered spring term. Evening.

340x Constitutional Interpretations (4)

Collier

Advanced course in constitutional law. The Constitution and constitutional tradition; doctrines of limited government, separation of powers, implied limitations on legislative power, and significance of "due process" in current constitutional developments. Introduction to comparative constitutional law, with studies in the constitutional law of selected states of the Union. Evening.

345 Substantive Patent Law* (2)

Harris

Substantive patent law; patentability; revision, use, and enforcement of patents. Evening.

346 Patent Office Practice* (2)

Henry

Rules of practice; appeal and interference procedure. Evening.

349-50 Patent Trial Practice Court* (2-2)

Henry, Geniesse

Practice before the United States Court of Customs and Patent Appeals, the District Court of the United States for the District of Columbia, and the Court of Appeals for the District of Columbia involving suits under Section 4015 of the Revised Statutes; practice before the United States courts in infringement. Evening.

This course may be elected instead of Law 335-36 to satisfy the Trial Practice Court requirement. Both courses may not be counted toward a degree.

351x Public Utilities (2)

Fryer

Regulation by governmental agencies concerned with power fields, dealing principally with services required and determination of rate of return based on "net investment" doctrine. Study of techniques employed in original proceedings and nature of judicial review. Examination of policies underlying national controls over distribution of electricity and natural gas. Evening.

* Patent law students should take Law 345 and Law 346 concurrently in the fall term and Law 346 and Law 350 concurrently in the spring term. Law 349-50 may be taken only by students who are taking or have taken Law 345.

- 365 *Government Contracts I* (2) McIntire
A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of Government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims. Evening.
- 366 *Government Contracts II* (2) McIntire
Special problems in Government contracts, including adjustments and relief; stand-by contracts for mobilization of industrial resources; special relief provisions; efforts toward unified procurement activity; procedure for prosecuting claims under Government contracts; attempts at price, cost, or profit control; termination. Evening.
- 369 *Jurisprudence* (4) Collier
History of jurisprudence; schools of jurists, particularly the nineteenth century schools; sociological jurisprudence; theories of justice; the nature of law; law and morals; law and the state; the scope and subject matter of law, sources and forms of law; the traditional element; analysis of general legal concepts. Evening.
- 373x *Taxation* (2) Collier
Introductory course on basic concepts of federal tax system. Attention given to state inheritance and income taxes. Problems of jurisdiction to tax, construction of tax statutes, methods of judicial review of administrative actions in the tax field, modern excise taxes on business concerns. Magill and Maguire, *Cases on Taxation*, 4th ed. Evening.
- 374x *Taxation—Federal Estate and Gift* (2)
Specific problems in federal estate and gift taxation, with consideration of relevant state inheritance tax problems. Evening.
- 375-76 *Taxation—Federal Income* (2-2) Fey, Driscoll
A study of the federal income tax, including construction of statutes, practice and procedure, and legislative policy in the development of the income tax structure. Morning and evening sections. (Also offered 1954 summer term.)
- 377 *Torts II—Unfair Trade Practices* (4) Weston
Unfair trade practices at common law and under state and federal statutes. Trade-marks and trade names, including Trade-Mark Act of 1946. Misappropriation. False advertising at common law. Federal Trade Commission jurisdiction over misrepresentation practices. Lotteries and premiums. Disparagement of competitor's goods and business methods. State Fair Trade Acts (resale price maintenance). Price discrimination (State and Federal Robinson-Patman Act). State statutes prohibiting sales below cost. Inducing breach of contract. Commercial bribery. Miscellaneous business Torts constituting unprivileged interferences with advantageous business relations. Oppenheim, *Unfair Trade Practices, Cases, Comments and Materials* (1950). Morning and evening sections.

- 378 *Federal Anti-Trust Laws* (4) Hilder
 Restraints of trade at common law. Public policy under Sherman Anti-Trust Act of 1890 and Federal Trade Commission and Clayton Acts, including mergers, consolidations, and monopoly. Loose association activities (price-fixing agreements, trade associations, international cartels). Specific practices such as resale price maintenance, delivered price systems, exclusive arrangements and tying devices, trade boycotts. Patents and copyrights under anti-trust laws. Remedies. Oppenheim, Cases on Federal Anti-Trust Laws. Evening.
- 381 *Trusts* (4) Weaver
 Creation, elements, administration, enforcement, termination. Liabilities to and of third persons. Resulting and constructive trusts. Bogert, Cases on Trusts, 2d ed. Morning and evening sections. (Also offered 1954 summer term.)
- 383 *Military Law and Jurisdiction* (2) Wiener
 Sources of military jurisdiction; military law proper, including courts-martial jurisdiction and procedures before, during, and after trial; military government; martial law; laws of war and treatment of offenders. Evening.
- 386 *Aviation Law* (2) Rhyne
 Procedure before Civil Aeronautics Board; legal problems arising in connection with air transportation and airports, international conventions and organizations. Evening.
- 388 *Admiralty* (2) Colclough
 Federal and state jurisdiction; jurisdiction over waters, craft, contracts, torts, crimes, in equitable matters, etc.; laws applicable to maritime workers and maritime liens. Sprague and Healy, Cases on Admiralty. Evening.
- 391 *Regulation of Communication Media* (2) Mayo
 An examination of the legal doctrine relating to regulatory practices in the channels of mass communications, i.e., newspapers, motion pictures, and radio-television; analysis of the operational structure of the mass media and the pattern of control exercised by government, private associations, and various community groups; appraisal of the comparative utility of various regulatory techniques for implementing policies affecting these media; special emphasis will be placed on the functions of the Federal Communications Commission. Evening.

GRADUATE COURSES

- 403x *Administrative Law Seminar* (2) Davison
 Group study of specific problems in administrative law. Evening.
- 405x *Legal Problems in Modern Methods of Warfare* (2) Mallison
 The contemporary international law of war: the legal aspects of modern methods of exercising coercion (economic, political, psychological, and military); the conduct and regulation of hostilities; the special problems of atomic, bacteriological, and chemical weapons; war crimes. Evening.

- 408 *Regulation of Securities and Securities Markets (2)* Kroll
A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission. Evening.
- 410X *Modern Social Legislation (2)* Merrifield
Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age. Evening.
- 412 *Recent Legal Developments in International Relations (2)* Czyzak
A study of selected current problems, including the most significant provisions of international trade agreements, particularly the General Agreement on Tariffs and Trade; a review of international commodity problems; and an examination of the legal doctrine relating to the Coal and Steel Community (Schuman Plan). (Not offered in 1954-55.)
- 414 *Control and Use of Atomic Energy (2)* Mayo
Various legal problems involved in the control and use of atomic energy will be examined including the Atomic Energy Act, the policy underlying the present government monopoly, the security problem of safeguarding atomic military information, the implications in prospective industrial control and use, and legal means of protecting personal interests against the possible consequences of atomic warfare. Evening.
- 415 *Comparative Law (4)* Murdock
Historical and comparative study of the fundamental principles of the Roman and modern Civil Law (law of South and Central America and most of continental Europe); comparative study of selected legal institutions to exemplify significant differences between the civil and common law systems in source materials and in methods and approaches to the solution of legal problems. Evening.
- 417 *Legislative Drafting (2)* Zinn
Advanced instruction and practice in legislative drafting. Evening.
- 421 *Constitutional Law Seminar (2)* Collier
Group study of contemporary problems in constitutional law. (Not offered in 1954-55.)
- 423X *Criminal Practice and Administration (2)* Cooper
Group study of the fundamental aspects of criminal procedure with special reference to practice before the District of Columbia and federal courts: the law of arrest, searches and seizures, self-incrimination, the function of the preliminary examination and grand jury, sufficiency of indictments, trial procedure, and the order of pleas and motions. Time to be arranged.

- 427 *World Law* (2) Czyzak
The United Nations as a basis of reference for a study of international law. Evening.
- 430x *International Law Seminar* (2) Murdock
Group study of contemporary problems in international law. Evening.
- 432 *Comparative Law Seminar* (2) Murdock
Group study of contemporary problems in comparative law. Evening.
- 437 *Monetary Law* (2) Dach
Introductory survey of the provisions of public law by which money is administered, relating particularly to the Federal Reserve Systems; the legal character of money and of monetary obligations; legal tender; the "dollar-for-dollar" rule and its limitations; protective clauses (gold, commodity, and index clauses). Particular emphasis will be given to the law relating to foreign money; money of contract; money of payment; conversion; rate of exchange; conflict of laws problems. Evening.
- 451x *Trade Regulation Seminar* (2) Weston
Group study of current problems relating to unfair trade practices and federal anti-trust laws. Evening.
- 461 *Corporate Taxation Seminar* (2) Fey
Group study of special problems in corporate taxation. Evening.
- 462 *Federal Taxation Seminar* (2) Fey
Group study of special problems in federal taxation. Evening.
- 466 *Estate Planning Seminar* (2) Weaver
Consideration of the problems involved in planning an effective and economical gift distribution of property interests. Typical estates, both large and small, will be considered in the light of the results commonly sought by the donor and the techniques and restrictions suggested by the law of property, wills, future interests, insurance, and federal and state taxation. Evening.
- 468 *Labor Law Seminar* (2) Merrifield
Group study of contemporary problems in labor law. Evening.
- 470 *Food and Drug Law* (2) Goodrich, Kleinfeld
A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered. Evening.
- 471 *Research in Public Law* (2)
Research in public law under supervision of a member of the Faculty. Time to be arranged.
Law 471x, same as 471, offered spring term. Time to be arranged.

DEGREES CONFERRED

BACHELOR OF LAWS

MAY 27, 1953

Walker Eldon Anderson	S.C.	Kenneth Samuel Gotobed	Nebr.
B.S. 1951, University of South Carolina		A.B. 1951, The George Washington University	
Frederick Bates Arner	D.C.	David Allen Grammer, Jr.	N.M.
A.B. 1947, Kenyon College		B.B.A. 1947, University of Texas	Va
William Batchelder Bennett	Va.	Gerald William Hammer	
B.S. 1935, University of New Hampshire		A.B. 1950, Ball State Teachers College, Indiana	Md.
A.M. 1916, Ph. D. 1941, Louisiana State University		John Webster Hardwicke	Calif.
Stanford Warner Berman	D.C.	A.B. 1950, University of North Carolina	
B.S. in M.E. 1950, University of Maryland		Frank Edmund Hart	Md.
Harold Ralph Berson	Nev.	B.S. 1948, University of San Francisco	
A.B. in Govt. 1949, The George Washington University		Irving Mark Heshit	Va.
Leonard Saul Blomdies	D.C.	B.B.A. 1947, College of the City of New York	
A.B. 1951, Western Reserve University	Calif.	James Grant Hellmuth	D.C.
James Sanders Boone		B.S. 1948, Yale University	
A.B. 1950, University of California	Va.	Edwin Nott Henson, Jr.	D.C.
George Newton Cade, Jr.		A.B. 1948, The George Washington University	P.C.
B.S. 1933, A.M. 1935, University of Arkansas	Ark.	Lucy Benedetto Henson	Md.
Byron David Casteel		B.S. 1950, Wilson Teachers College	
A.B. 1947, University of Texas		William Hintze	Va
M.D. 1941, Harvard University		B.E.E. 1949, The George Washington University	
M.P.H. 1940, Johns Hopkins University	N.Y.	William Collis Holcombe	Va.
Donald John Caulfield		A.B. 1946, The George Washington University	D.C.
A.B. 1951, The George Washington University	N.Y.	Calvin Clark Jones	
Fred Robert Cerf		Edward Floyd Kilpatrick	Ill.
A.B. 1940, New York University	Hawaii	A.B. 1933, University of Missouri	
Donald Dai Heong Ching		Casimir Thaddeus Krol	Md.
A.B. 1950, University of Hawaii	D.C.	A.B. 1947, St. John's College	
James Brent Clarke, Jr.	Va.	Vasilios Simos Lambros	Ill.
Alexander John Couble		M.D. 1949, Georgetown University	
B.S. 1919, U. S. Naval Academy	D.C.	Ernest Henry Land	N.C.
Robert Gladden Crooks		A.B. 1950, Illinois College	
B.S. in M.S. 1940, Massachusetts Institute of Technology	Pa.	James Fugate Lawrence, Jr.	D.C.
Frank Hickman Cutajar		B.S. 1941, University of North Carolina	Md.
B.S. in Ed. 1940, Pennsylvania State Teachers College, West Chester	Va	Thomas Perry Lippitt	D.C.
John Joseph Daly		George Freeland MacKay	
A.B. 1946, The George Washington University	Kans.	A.B. 1950, Tufts College	Va.
James George Dieter		Robert Charles Mayer	
B.S. 1949, Kansas State College	D.C.	B.S. 1948, Georgetown University	N.Y.
Horace Robert DiMartino	Va	William Thomas McDermott	
Leslie Vernon Dix		B.S. 1935, University of New Hampshire	
A.B. 1939, Iowa State Teachers College	Va	Ed. M. 1916, Boston University	Md
John Elbridge Donaldson, Jr.		Charles John McPeak	Kans
A.B. in Govt. 1949, The George Washington University	Va	A.B. 1950, St. John's University	
Thomas James Dougherty		Victor Marie Merouclano	Md
A.B. 1941, The George Washington University	Iowa	Alvin Donald Messenheimer	
Wayne J. Dougherty	N.Y.	B.S. in E.E. 1947, Kansas State College	Ill
A.B. 1941, State University of Iowa		Douglas Hamilton Moore, Jr.	
Abraham Frankel		B.S. 1950, The George Washington University	N.I.
B.S. 1911, Brooklyn College		Jack Curtis Morris	
B.M.E. 1941, Cooper Union		A.B. 1949, Columbia University	
		John J. Nachshheim	
		B.S. 1947, Webb Institute of Naval Architecture	

John Willard Nally, Jr. A.B. 1944, University of Georgia	Md	Rose Skalak A.B. 1939, Hunter College	N.Y.
Henry Norman A.B. 1951, Western Maryland College	N.Y.	Harold Smith A.B. 1953, The George Washington University	D.C.
Margaret Pallansch A.B. 1949, Trinity College	Wn.	Harold Cairnes Smith, Jr. A.B. 1950, The George Washington University	Md.
Charles H. Parker B.S. 1942, Worcester Polytechnic Institute	Va.	Jennings Talbot Smith A.B. 1950, The George Washington University	Md.
LaGrange Winfield Perce III A.B. 1950, The George Washington University	Pa.	John Henry Spalding A.B. 1949, The George Washington University	D.C.
Frederick William Raring B.S. 1949, Lehigh University	D.C.	Arnold Charles Stensborg A.B. 1947, University of Wisconsin	Mass.
James Gavin Reardon A.B. 1950, College of the Holy Cross	Mass.	Edward Cornelius Sweeney A.B. 1939, University of Kentucky	Ill.
Vernon Bradford Romney B.S. 1948, University of Utah	Utah	M.D. 1942, Tulane University	
Hellen Miller Rosenthal A.B. 1950, Wellesley College	N.Y.	Stuart Hackstaff Sweney A.B. 1949, Upson College	Md.
Frank Powell Sanders Mazine Scarborough	N.C.	James Dunlap Tamos A.B. 1949, University of Pennsylvania	Va.
A.B. 1937, University of South Carolina	S.C.	Andrew Eugene Taylor B.S. in M.E. 1947, Tufts College	Md.
A.M. 1947, Columbia University		William Grayville Tinsley A.B. 1939, Centre College	Va.
Harry George Sells A.B. 1949, University of Pittsburgh	Va.	Gerard Gordon Wolf A.B. 1948, Washington and Jefferson College	N.Y.
James Steek Sherwood A.B. in Govt. 1947, The George Washington University	Va.	Alfred Lawson White Thomas Bennett Wood	Md.
Alvin Tonk Shim A.B. 1949, University of Hawaii	Hawaii	B.B.A. 1941, University of Texas	Texas

NOVEMBER 11, 1953

John Francis Ahern B.S. 1949, Lehigh University	Pa.	Jerome Kraus A.B. 1942, University of Chicago	Md.
Seymour Berry A.B. 1951, The George Washington University	Md.	B.S. in F.E. 1947, University of Illinois	
James Vernon Brown A.B. 1950, Morris Harvey College	W.Va.	Raymond Franklin Lippert B.M.E. 1949, The George Washington University	Md.
Suzanne Francis Cassetta A.B. 1951, San Jose State College	Calif.	Robert Eugene Lyle A.B. 1950, The George Washington University	Texas
Dore Edward Cassity A.B. 1950, The George Washington University	Utah	Samuel Shepard Dennis Marsh A.B. 1948, Yale University	D.C.
Emmett Jerome Comiskey B.S. in F.S. 1950, Georgetown University	Ill.	Louise 1950, Graduate Institute of International Studies, Geneva, Switzerland	
Lois G. Craig A.B. 1941, West Virginia University	W.Va.	Harry Robert Martin A.B. 1946, University of Puerto Rico	D.C.
William Palmer Crandall Robert Bingham Crook	Md.	Charles Eugene Mormigliano Doris Alexandrescu Muresianu	D.C.
B.S. 1949, University of Idaho	Idaho	A.B. 1950, M.C.L. 1945, University of Bucharest	D.C.
James Wunthorpe Crowley A.B. 1950, The George Washington University	Tenn.	Edward George Najanko B.S. 1946, University of Pennsylvania	Pa.
Silvey Timolore Daniel A.B. 1942, New York University	Va.	Bvard Gary Nilsson B.S. in F.E. 1950, University of Utah	Utah
John G. Drake B.S. 1950, American University	Va.	David Pierre Ogden B.S. in E.E. 1950, Union College	N.Y.
John Walker Fullin A.B. 1947, Yale University	Va.	Karl Anthony Goralik B.S. 1948, Ohio State University	Ohio
Robert Flouvy Genereilly A.B. 1948, University of Rochester	D.C.	William Pinnaus A.B. 1941, Brooklyn College	Md.
Thomas Raymond Hammill, Jr. A.B. 1948, University of Rochester	N.Y.	A.M. 1948, American University	
Thomas Norman Kuchness A.B. 1951, University of Maryland	Md.	William Nelson Puett John Joseph O'Neil	N.C.
		A.B. 1950, Ohio Wesleyan University	Conn.

Joseph Radko	Pa.	Milton David Stewart	N.Y.
A.B. 1936, Wilkes College		A.B. 1941, New York University	
Julian Carroll Reistro	Fla.	M.S. 1942, Columbia University	D.C.
B.S. in Aero. Eng. 1948, University of Michigan		Edwin Tillman Stirling	
Robert Dale Rolander	Kans.	B.S. 1951, The George Washington University	Calif.
B.S. 1950, University of Colorado		Richard Tucker Sykes	Va.
Robert Frank Roemels	Mo.	(With distinction)	
B.S. in M.E. 1943, Washington University		Ralph Henry Vogel	Ky.
Eugene Sabol	N.Y.	B.S. 1946, Harvard University	
B.Chem.E. 1950, Rensselaer Polytechnic Institute		Joe Edward Waters	Va.
Eliot Siskind	Md.	B.S. in F.S. 1950, Georgetown University	
A.B. 1948, Johns Hopkins University		Norman Ariel West	Va.
Richard Glenn Stephens	Ind.	A.B. 1949, University of Richmond	
B.S. in E.E. 1948, Purdue University		Philip Brand Yeager	
		A.B. 1950, University of Arizona	

FEBRUARY 22, 1954

Carl Wiltred Baker	D.C.	Daniel Walter Martin	Md.
B.S. 1948, Ohio State University		Emmett Hiram Nanna, Jr.	Md.
Ruth Storer Barbee	Md.	A.B. 1950, University of Maryland	D.C.
Frederick James Bear	Va.	John Vincent Regan	Mo.
B.S. in B.A. 1947, Miami University		B.S. in E.E. 1951, Tufts College	
Leonard Beckin	D.C.	Robert Owen Richardson	Puerto Rico
B.M.E. 1950, Cooper Union		B.S. 1946, Drury College	
Irving John Casey	N.Y.	Miguel Juan Rios-Lugo	
A.B. 1946, Brown University		A.B. 1951, The George Washington University	Va.
Douglas Tenney Carbin	N.Y.	Terrell Louis Ruhlman	
B.S. 1951, St. Lawrence University		B.S. in Ch. Eng. 1949, Pennsylvania State College	Va.
Joseph Warren Darling	Fla.	John Clifford Ryan	Ind.
B.S. 1941, Harvard University		A.B. 1947, Iona College	
M.B.A. 1941, University of Pennsylvania	N.Y.	Joseph Maxim St. Amand, Jr.	Ky.
Francis Martin De Caro		B.S. in E.E. 1949, Purdue University	
A.B. 1951, Syracuse University	Ky.	Edwin Giltner Salyers	Md.
Robert Edward Delahanty		B.S. 1941, Lincoln Memorial University	
B.C.E. 1948, University of Louisville	Md.	One Seltzer	
Robert Carroll Dyaland	Md.	A.B. in Govt. 1951, The George Washington University	Md.
Francis John Gilmore		Jacob Shuster	
A.B. 1951, Georgetown University	Okla.	B.M.E. 1949, College of the City of New York	Md.
Luke Barrett Goodson	Utah	Milton Joseph Soclar	Idaho
A.B. B.S. 1947, University of Oklahoma		B.S. 1950, University of Maryland	
Richard Leroy Greeter	Ind.	Charles E. Spence, Jr.	Ore.
A.B. 1950, University of Tennessee		A.B. in Govt. 1950, The George Washington University	
Edward George Griss	Md.	Ralphine Ronald Sparing	Va.
B.S. 1949, M.S. 1951, Purdue University		A.B. 1937, University of Oregon	
Dr. en Droit 1950, University of Lyons	D.C.	A.M. 1941, Louisiana State University	
George Latham Harris		Richard Carlisle Stieffey	N.Y.
B.S. 1917, U. S. Naval Academy		A.B. 1941, Roanoke College	
John Henry Heck		Joseph Stitelman	Texas
A.B. 1941, Pennsylvania State College	D.C.	B.S. in E.E. 1954, Cooper Union	
A.M. in Govt. 1941, The George Washington University		Daniel Kidder Trevino, Jr.	Wis.
George Edward Hutchinson		B.B.A. 1948, University of Texas	
A.B. 1951, The George Washington University	Va.	Arnold Isidor Weber	Md.
Lee Farnum Johnson, Jr.	Pa.	Ph.B. 1949, Marquette University	
A.B. 1951, University of Colorado		A.M. 1950, Harvard University	
Norman William Jones	Texas	Michael Wolf Werth	Md.
B.S. 1948, University of Scranton		B.S. 1948, Illinois Institute of Technology	D.C.
Dee J. Kelly	R.I.	Fairland Henry Wetherbee	
A.B. 1950, Texas Christian University		Harry F. Wickline	
Fred Paul Knatch	N.Y.	Charles Latimer Wilkes	
B.S. in M.E. 1942, University of Rhode Island		A.B. 1950, Dartmouth College	
Robert Allen Low		James Claiborne Wilkes, Jr.	
A.B. 1941, Stanford University		A.B. 1950, Dartmouth College	

Zeb Leopold Wolf	D.C.	Herman Joseph Ziegler	N.J.
B.S. 1951, Northwestern University		A.B. in Govt. 1951, The George Washington University	
Lloyd Lynn Zickert	Va.	Howard Francis Zoarski	Conn.
B.S. in M.E. 1950, Purdue University		B.S. 1950, University of Maryland	

JURIS DOCTOR

MAY 27, 1953

Robert Oakleigh Bloch	Nebr.	Clyde Robinson Mann	Fla.
A.B. 1949, The George Washington University		B.S. 1947, East Carolina College	
James Henry Doyle, Jr.	Calif.	Stewart Fawcett Moore	W Va.
(With distinction)		A.B. 1941, Bethany College	
B.S. 1946, U. S. Naval Academy		B.S. in E.E. 1948, Carnegie Institute of Technology	
John David Eaton	Mass.	Vernon Ames Pelzer	Ill.
(With distinction)		A.B. 1941, DePauw University	
B.S. 1944, U. S. Naval Academy		William Ross St. George	N C
Clyde Vernon Erwin, Jr.	Ill.	(With distinction)	
A.B. 1945, North Central College		B.S. 1946, U. S. Naval Academy	
Paul James Fildes	Va.	William Robert Sherman	Va
B.S. 1949, Iowa State College		B.S. 1946, University of Wisconsin	
Henry Fredrick Hamann	Va.	George Mulford Terry	Md.
Ph.D. 1948, University of Wisconsin		A.B. 1947, The George Washington University	
Earl Winslow Johnson	Pa.	Simon Tucker	Va
B.S. 1942, Pennsylvania State College		B.S.S. 1949, College of the City of New York	
Melvyn Herbert Keir	Ind.	M.P.A. 1941, New York University	
B.S. 1941, Indiana University		Sheldon, William Witcoff	D C
Derek Peter Lawrence	Va.	B.S. 1949, University of Maryland	
B.M.E. 1948, Clarkson College			

NOVEMBER 11, 1953

George Herbert Patrick Bursley	D.C.	William Joseph Kirkley	Va.
B.S. 1946, U. S. Coast Guard Academy		B.S. 1946, U. S. Coast Guard Academy	
Gaslowe Edgar Byron	Md.	James Byron McIntyre	W Va
A.B. 1951, University of Virginia		A.B. 1941, Morris Harvey College	
William Alvin Grandberry	Ala.	John Paul Obaraki	Pa
B.S. in Eng. 1949, Georgia Institute of Technology		B.S. 1945, U. S. Coast Guard Academy	
Lloyd Allen Heneveld	Mich	Milton Maurice Peterson	Va
B.S. in E.E. 1950, University of Michigan		B.S. 1946, Central Michigan College of Education	
David Lloyd Kelley	D C	M.S. 1947, University of Michigan	
B.S. in E.E. 1949, Lehigh University		Marvin Clarence Sullen	D C.
Raymond Joseph Kenney	N Y	B.Chem.E. 1949, Cornell University	
B.S. in Chem.E. 1950, University of Connecticut		Rowena Weiss	D C
Charles Turner Kippa, Jr.	Va	B.Chem.E. 1949, Catholic University of America	
B.S. in B.A. 1951, American University			

FEBRUARY 22, 1954

Donald Earle Bilger	Va	Matthew Charles Thompson	Va.
B.S. 1951, University of Colorado		B.S. in Ch. Eng. 1949, Iowa State College Agriculture and Mechanic Arts	
Barbara Raven Evans	Va		
A.B. 1947, College of Wooster			
Eric Howard Hansen	Idaho		
A.B. 1950, University of Idaho			

MASTER OF LAWS

MAY 27, 1953

Carl William Belcher A.B. 1949, Duke University LL.B. 1953, The George Washington University	Ky.	William Leonard Keller LL.B. 1957, Southern Methodist University	Texas
Cyril Francis Brickfield LL.B. 1948, Fordham University	N.Y.	John Joseph Mitchell B.S. 1947, Boston University LL.B. 1947, Georgetown University	Mass.
John Reeder Bronaugh B.S. in M.E. 1947, Virginia Polytechnic Institute J.D. 1951, The George Washington University	D.C.	Frank Richard Ortolani B.S. 1944, B.S. in Chem.E. 1948, Pennsylvania State College LL.B. 1951, The George Washington University	Pa.
Lawrence Robert Caruso A.B. 1949, LL.B. 1950, The George Washington University	N.J.	Walter Franklin Sheble A.B. 1948, Princeton University LL.B. 1952, The George Washington University	D.C.
Carl Clell Davis B.S. 1942, Oklahoma Agricultural and Mechanical College LL.B. 1949, University of Oklahoma	Okla.	Abraham Siegel B.S. 1940, College of the City of New York J.D. 1950, The George Washington University	Calif.
Roy Theodore Englert A.B. 1943, Vanderbilt University LL.B. 1951, Columbia University	Va.	David Johnson Vann B.S. 1950, LL.B. 1951, University of Alabama	Ala.
James Carleton Fleming B.S. 1946, J.D. 1950, Indiana University	N.C.		Va.
John Christopher Kenney B.S. 1947, University of Scranton LL.B. 1949, Dickinson School of Law	Pa.	James Zett A.B. 1948, Middlebury College LL.B. 1943, Syracuse University	

NOVEMBER 11, 1953

James Ralph Beard B.S. 1949, LL.B. 1951, University of Alabama	Ala.	Ruth Evelyn King B.S. 1944, LL.B. 1956, University of South Dakota	D.C.
Thomas Jefferson Dillehay, Jr. B.B.A. 1937, A.M. 1939, Baylor University J.D. 1952, The George Washington University	Tex.	James Mahan Roamer, Jr. B.C.E. 1950, J.D. 1952, The George Washington University	D.C.

FEBRUARY 22, 1954

Henry Jules Camarot LL.B. 1951, The George Washington University	Alaska	Toney Hannon Sewell B.S. 1942, LL.B. 1948, University of Alabama	Ala.
John Henry Franz B.S. 1948, University of Notre Dame LL.B. 1951, Georgetown University	Ill.	Robert Louis Sweney A.B. 1948, LL.B. 1951, St. Louis University	Mo.
Edith Homan Miller B.S. 1945, University of Idaho LL.B. 1946, The George Washington University	Idaho	Dale Alan Wright B.S. 1948, Carnegie Institute of Technology LL.B. 1952, The George Washington University	Pa.
Wallace Don Riley Ph.B. 1947, University of Chicago B.B.A. 1949, M.B.A. LL.B. 1952, University of Michigan	Mich.		

MASTER OF COMPARATIVE LAW

MAY 27, 1953

Jose Abad Santos, Jr. Ph.B. 1941, University of the Philippines	Philippines	Georges Rene Delaume Doctor of Laws 1946, University of Paris	France
LL.B. 1949, University of Santo Thomas		Diosdado de la Fuente Gaytingo LL.B. 1949, University of Santo Thomas	Philippines

NOVEMBER 11, 1953

Kamal Mohamed Aboul-Kheir Licence en Droit 1943, University of Fouad I, Egypt	Egypt
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FEBRUARY 22, 1954

Hasean Mahood Al-Hashimi Licentiate in Law 1946, Baghdad Law College	Iraq	Vera Herta Lang Osman Dr. Jur. 1942, University of Vienna	D.C.
Ivan Paul Glaser-Skalny Dr. Jur. 1933, Comenius University	Va.	Borge Kvamme Varmer Cand. Juris. 1940, University of Copenhagen	D.C.

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

MAY 27, 1953

Jaroslav Jira J.U.D. 1911, Charles University of Prague	D.C.
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NOVEMBER 11, 1953

Karl Stoess LL.B. 1950, University of Erlangen, Germany	D.C.	Cornelius Henry Zondag LL.B. 1928, J.D. 1940, Leiden University, The Netherlands A.M. 1949, New York University	D.C.
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FEBRUARY 22, 1954

Erich Hans Markel S.I.D. 1941, Frederico-Alexandrine University of Erlangen	Va.
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LAW STUDENTS REGISTERED

SUMMER TERM 1953

FALL AND SPRING TERMS 1953-54

A			
Abbott, Frank LeRoy	D.C.	Archbold, William Cornell, Jr.	Pa.
A.B. 1949, Central Missouri College		B.S. 1950, Syracuse University	Md.
Abdulla, Mohammad	India	Archer, Glenn LeRoy	Va.
A.B., LL.B., University of Madras, India		A.B. 1951, Yale University	
Ablard, Charles David	Okl.	Arceneau, Paul Florian	B.E.E. 1950, Marquette University
A.B. 1952, University of Oklahoma		M.S. in E.E. 1951, Harvard University	W.Va.
Aboul Kheir, Kamal Mohamed	D.C.	Asher, John C.	Pa.
LL.B. 1948, Fouad I University, Egypt		A.B. 1952, West Virginia University	
Abrams, Yehuda Hillel	Md.	Austin, Robert Earl	Pa.
A.B. in Govt. 1951, The George Washington University		B.S. 1950, Pennsylvania State College	
Acevedo, Fernando	Md.	B	
B.S. 1952, University of Maryland		Babinski, Matthew	Va.
Ackerly, Robert Louis	Md.	B.S. 1949, Worcester Polytechnic Institute	Va.
LL.B. 1950, The George Washington University		Bachrach, Morton Weisel	
Adams, Robert Lazenby	Fla.	B.S. 1947, Roanoke College	
A.B. 1952, University of Pennsylvania		LL.B. 1952, The George Washington University	D.C.
Adams, William Rule, Jr.	N.J.	Bacon, John William	Pa.
A.B. 1951, Stanford University		B.S. 1950, Cornell University	
Aegerter, Richard Edward	Idaho	Baily, J. Edgar	Ala.
B.S. in Agr. Eng. 1948, B.S. in C.E. 1950, Utah State Agricultural College		A.B. 1950, University of Pittsburgh	
Ahern, John Francis	Pa.	Baines, Herman Hershel	D.C.
B.S. 1949, Lehigh University		B.S. 1950, University of Alabama	
Aiken, Richard Louis	Mo.	Baker, Carl Wilfred	Md.
B.S. in E.E. 1953, Cornell University		B.S. 1948, Ohio State University	Pa.
Alenbik, Aaron Isaac	Va.	Baker, Raymond Edward	D.C.
B.S. 1951, Georgetown University		Baker, Waldon Lee	
Alexander, Charles Pyckach	Colo.	Ballew, Harry Lee	
A.B. 1950, University of Denver		A.B. 1951, University of North Carolina	Ky.
Al-Hashimi, Hassan Mahmood	Iraq	Ballmann, Francis Xavier	Aris.
Licentiate in Law 1946, Baghdad Law College		B.S. 1948, Georgetown University	
Allen, Edward Clayton	Md.	Banicovich, Frank	Md.
A.B. 1947, Gettysburg College		B.S. 1953, Arizona State College	Va.
Allen, Grace Alexander	Md.	Barbee, Ruth Stone	
A.B. 1952, Montana State University		Barbour, Ernest John	
Allen, Sidney Jr.	Va.	A.B. 1942, University of California at Los Angeles	Mich.
B.S. 1942, Michigan College of Mining and Technology		Bardello, Richard Ainsworth	
Alster, Caliste Jay	Ill.	A.B. 1952, University of Michigan	Va.
B.S. 1948, Massachusetts Institute of Technology		Barner, Herman Harold	Va.
Ames, Walter Donald	N.Y.	A.B. 1947, Harvard University	
B.S. 1951, Pennsylvania State College		Barnard, Ralph Roger	Pa.
Andersen, Donald George	Nebr.	B.E.E. 1949, Cornell University	
A.B. 1952, University of Nebraska		Baron, John Theodore	R.I.
Anderson, David Carver	Fla.	Ph.B. 1949, Muhlenberg College	
B.S. 1952, University of Illinois		Bassman, Walter	Kans.
Andrews, Nello David Sylvester	Ala.	A.B. 1951, Brown University	
A.B. 1941, Vanderbilt University		Bask, John Wilson	
LL.B. 1949, University of Virginia		B.S. 1949, Kansas State College of Agriculture and Applied Science	Pa.
Ansbacher, Lewis	Fla.	Bastacky, Stanley Norman	Mo.
A.B. 1947, LL.B. 1951, University of Florida		A.B. 1953, University of Pittsburgh	
Ansell, Edward Orin	Wis.	Bastian, James Harold	N.H.
B.S. in E.E. 1948, University of Wisconsin		B.S. 1950, University of Missouri	
Antonelli, Francis Anthony	D.C.	Batchelder, John Gardner	Tenn.
A.B. 1952, The George Washington University		B.S. 1950, University of New Hampshire	
		Bates, George Marshall	
		B.S. 1948, U. S. Naval Academy	

Bayer, Bruce LeRoy B.S. 1951, University of Wisconsin	Wis.	Bohmer, Alois J.D. 1946, University of Prague	D.C.
Beard, James Ralph B.S. 1949, L.L.B. 1951, University of Alabama	Ala.	Boisvert, Harold Vincent Ph.B. 1949, Notre Dame of Maryland College	Md.
Bean, Keith Roger B.S. 1951, University of Utah	Utah	L.L.B. 1947, Catholic University of America	
Bear, Frederick James B.S. in B.A. 1947, Miami University	Va.	Boland, Margaret Anne A.B. 1950, Nazareth College	N.Y.
Beck, Harold Russell B.S. 1951, Case Institute of Technology	D.C.	Bond, Russell Evans A.B. 1951, Washington Missionary College	Md.
Beckett, William Wade B.C.E., 1948, The Citadel	Fla.	Bonney, Jack B.S. 1949, A.M. 1952, Pennsylvania State College	Va.
Beckman, Victor Rudolph B.S. 1952, University of Wisconsin	Md.	Bordello, Richard Ainsworth A.B. 1952, University of Michigan	D.C.
Beesley, Winford Angus, Jr. A.B. 1952, University of Utah	Utah	Bouck, David P. A.B. 1951, University of California at Los Angeles	Calif.
Begg, Eric Kirk, Jr. A.B. 1949, Wesleyan University	Conn.	Bourne, Hunter Carson, Jr. B.E.E. 1945, R.I. Inst. E. 1947, Virginia Polytechnic Institute	Va.
Bellin, Leonard B.M.E. 1950, Cooper Union	N.Y.	Bourne, Robert Duffies A.B. 1950, University of Michigan	Va.
Belinger, Edgar Thomson A.B. 1951, Haverford College	Md.	Bovey, George Julian B.S. 1951, University of Maryland	Md.
Bender, Fred William, Jr. A.B. 1951, University of Maryland	Mont.	Boylan, Reuben Whittle B.S. 1947, Mississippi State College	Miss.
Bennett, Edward Ferris III A.B. 1951, University of Maryland	D.C.	L.L.B. 1949, University of Mississippi	
Bennett, Jack Franklin Ph.D. 1954, Yale University	Md.	Bradlock, Harry Elton B.S. 1945, U. S. Naval Academy	Md.
Bennett, Shirley Goodwin A.B. 1950, Rollins College	Md.	Brannan, Arthur Livingston B.S. in F.E. 1952, Georgia Institute of Technology	Ga.
Berardo, Roland Almond John B.S. 1951, M.S. 1952, American University	R.I.	Brastow, Jerome Durvea A.B. 1949, The George Washington University	Md.
Bergmann, Robert Theodore B.E.E. 1941, University of Missouri	Md.	Braun, Frederick Herman B.S. in M.E. 1948, University of Cincinnati	Ohio
Beres, Robert Austin B.S. 1947, U. S. Naval Academy	Ill.	Breastadt, Martin B.S. 1950, Ohio State University	N.Y.
Bermin, Edward Bernard A.B. 1948, A.M. 1950, Ph.D. 1951, Harvard University	Md.	Bremer, Frederick Godfrey B.S. 1948, University of Notre Dame	D.C.
Berlin, Walter Charles B.B.E. 1949, University of Denver	D.C.	Brenner, Joseph Frank A.B. 1951, Rutgers University	N.J.
Berry, Seymour A.B. 1951, The George Washington University	Md.	Brewer, Charles Monahan A.B. 1951, University of Maryland	Md.
Best Lee James A.B. 1949, Duke University	D.C.	Broad, Charles Stuart A.B. 1950, University of Minnesota	Nebr.
Bharavan, Suresh L.L.B. 1944, University of Thammasat, Thailand	D.C.	Broad, Robert Louis, Jr. B.S. in M.F. 1951, University of Michigan	Ala.
Beiswenger, James Joseph B.S. 1947, L.L.B. 1949, Georgetown University	Nebr.	Bromell, John Bowler B.S. 1952, Northwestern University	D.C.
Bel Edwin Arthur B.S. 1950, University of Illinois	Ill.	Brookbank, John Spencer, Jr. B.S. 1954, University of Maryland	Md.
Baker, Donald Leslie B.S. 1951, University of Colorado	Va.	Brooks, Virginia Lou A.B. 1951, University of California at Los Angeles	Calif.
Baker, Allen Raymond B.S. 1950, University of Maryland	Md.	Brooks, William L. B.S. 1951, Brooklyn College	N.Y.
Barnes, Francis B.S. 1951, Ricks College	Idaho	Brown, Elsie Mae A.B. 1949, The George Washington University	D.C.
Barlow, Samuel Carter A.P. 1952, Haverford College	Md.	Brown, Frederick William B.S. 1948, U. S. Naval Academy	N.Y.
Blum, Daniel B.M.E. 1944, College of the City of New York	D.C.	Brown, Gares Fildridge A.B. 1951, Kalamazoo College	Mich.
Blumenfeld, Isadore David B.S. in E.E. 1949, Case Institute of Technology	Ohio	Brown, James Aernal A.B. 1950, Morris Harvey College	W.Va.
J.D. 1951, The George Washington University			

Brown, Julian Mitchell	S.C.	Callahan, John Joseph	Mass.
A.B. 1944, University of Georgia		B.S. 1948, College of the Holy Cross	
Brown, Lester Theodore	Pa.	L.L.B. 1951, Boston College	Va.
B.S. 1947, Pennsylvania State Teachers		Calle, Martin Eric, Jr.	
College, East Stroudsburg		B.S. 1951, Indiana University	Alaska
A.M. 1949, The State College of		Camarot, Henry Jules	
Washington		L.L.B. 1951, The George Washington	
Brown, Miles Janney	D.C.	University	Ala.
A.B. 1940, Swarthmore College		Camp, Warner Hill	
Brown, Richard Lee	Texas	B.S. 1952, University of Alabama	Fla.
L.L.B. 1940, University of Texas		Campbell, Donald Rutz	
Brown, William Stuart	Iowa	B.S. 1951, Rensselaer Polytechnic	
B.S. 1945, M.S. 1952, Iowa State College		Institute	Md.
of Agriculture and Mechanic Arts		Canus, Edward Pollard	
Bruder, Bert Alan	N.J.	B.S. 1954, University of Maryland	Ill.
Brunner, John Junius Howard	Va.	Canady, Donald William	
B.E.E. 1950, Catholic University of		B.S. Met. Eng. 1951, University of	
America		Massouri	N.I.
Bryer, Richard Harry	N.Y.	Cappello, Joseph Paul	
B.Ch.E. 1940, Clarkson College		B.S. in F.S. 1950, Georgetown	Fla.
Buckley, James Joseph	N.H.	University	
A.B. 1952, St. Anselm's College		Carlisle, Russell Edison	Pa.
Buckley, Robert Baldwin	D.C.	A.B. 1953, University of Michigan	
B.S. in Eng. 1949, The George		Carlton, Francis Brandon	Ore.
Washington University		B.S. 1947, U. S. Naval Academy	
Buckner, James Weldon	Tenn.	Carlson, Harold Gustav	D.C.
A.B. L.L.B. 1950, University of		B.S. 1949, U. S. Naval Academy	
Tennessee		Carpenter, Edwin John, Jr.	
Bullington, Edward Weeks	Md.	A.B. 1952, The George Washington	Md.
B.S. 1947, Randolph-Mason College		University	
M.S. 1948, Virginia Polytechnic Institute		Carr, Lawrence Edward, Jr.	
Bullock, Joe Ragland	Miss.	B.S. 1948, L.L.B. 1949, College of	N.Y.
A.B. 1947, University of Denver		Notre Dame of Maryland	
Bunten, Elizabeth	D.C.	Casey, Irving John	Md.
A.B. 1950, The George Washington		A.B. 1947, Brown University	
University		Casey, Robert Patrick	N.Y.
Burgess, Aubrey Lewis	D.C.	A.B. 1951, College of the Holy Cross	
B.M.E. 1948, The George Washington		Case, Nathan	N.Y.
University		B.E.E. 1952, New York University	
Burns, Carl Ray	Md.	Cassotta, Salvatore Francis	Utah
A.B. 1948, Simpson College, Iowa		A.B. 1951, San Jose State College	
A.M. 1949, University of Iowa		Cassity, Donn Edward	D.C.
Bursley, George Herbert Patrick	Md.	A.B. 1950, Southwestern University	
B.S. 1946, U. S. Coast Guard Academy		Chamberlin, Gay Wadsworth, Jr.	Ala.
Bush, Don Porter	S.D.	B.S. 1950, Washington and Lee	
B.S. in F.E. 1952, South Dakota		University	
School of Mines and Technology		Champion, Marvin Ashbury	D.C.
Butterfield, Franklin Herman	Utah	B.S. 1944, Alabama Polytechnic	
A.B. 1949, University of Utah		Institute	
Buyarowicz, Stella Mary	Va.	Chappall, Richard Archibald	Mass.
A.B. 1945, Western Reserve University		A.B. 1926, Mercer University	D.C.
Byroski, Casimir Thomas	Conn.	Chapper, Frank Morris	
B.S. 1952, University of Connecticut		Cho, Sang Ryun	Mich.
Byerly, David Stevens	Md.	A.B. 1951, Monmouth College	
A.B. 1951, University of Virginia		Christiansen, James Richard	Ill.
Byrd, Robert Carlyle	W. Va.	B.S.E. 1950, L.L.B. 1951, University	
Byron, Goodloe Edgar	D.C.	of Michigan	
A.B. 1951, University of Virginia		Christiansen, Robert	Ind.
		B.S. 1950, University of Illinois	
		Christy, Lowell Francis	Del.
		B.S. 1950, Georgetown University	
		Clark, Robert Elliot, Jr.	Md.
		A.B. 1950, Dickinson College	
		Clarkson, Douglas Marvin	Texas
		B.E.E. 1950, Cornell University	
		Clay, Matthew Adam, Jr.	D.C.
		B.S. 1951, University of Maryland	
		Clay, James Powell, Jr.	Md.
		A.B. 1951, Bowdoin College	
		Clifford, Donald Marshall	
		A.B. 1949, American University	

Cochran, Fred Edward B.S. in B.A. 1931, Ohio State University LL.B. 1946, St. Johns University, N. Y.	Md.	Craft, Robert Wayne A.B. 1952, The George Washington University	D.C.
Collman, Edgar Donald Cohen, Melvin D.Ch.E. 1948, Virginia Polytechnic Institute	Va. D.C.	Cratton, Paul Arthur B.M.E. 1944, College of the City of New York	D.C.
Cole, Arnold Harvey B.S. 1949, College of the City of New York	N.Y.	M.S. 1950, University of Maryland	D.C.
Cole, Donald William A.B. 1950, University of Illinois	Va.	A.B. in Govt. 1950, The George Washington University	Va.
Cole, Edna Joan A.B. 1952, Brooklyn College	N.Y.	B.M.E. 1947, University of Kentucky	W.Va.
Cole, John Pope, Jr. B.S. 1951, Alabama Polytechnic Institute	D.C.	Craig, Louis Grant A.B. 1931, West Virginia University	D.C.
Colley, Benjamin Gilbert B.S. 1948, Union College and University	D.C.	Cram, James Wendell B.S. 1941, Northwestern University M.B.A. 1947, Harvard University	Colo.
Collins, John LeRoy A.B. 1950, Michigan State College	Mich.	B.Ch.E. 1951, M.Ch.E. 1952, Rensselaer Polytechnic Institute	Md.
Collins, Patrick John B.S. 1952, University of Maryland	D.C.	Crandell, Ralph Frederick B.Ch.E. 1951, M.Ch.E. 1952, Rensselaer Polytechnic Institute	R.I.
Colombo, Louis Robert A.B. 1950, Muhlenberg College	Pa.	Crawford, Clayton Eugene A.B. 1947, West Virginia Institute of Technology	Md.
Comiskey, Emmett Jerome B.S. in F.S. 1949, Georgetown University	Ill.	Craven, John Puma B.C.E. 1946, Cornell University M.C.E. 1947, California Institute of Technology	W.Va.
Conner, Robert Joseph B.S. 1949, University of Scranton LL.B. 1952, The George Washington University	Pa.	Ph.D. 1951, State University of Iowa	Mass
Conroy, James Joseph III A.B. 1952, The George Washington University	Va.	Crawford, Clayton Eugene A.B. 1947, West Virginia Institute of Technology	Va.
Conry, Frederick Louis B.S. 1951, Drexel Institute of Technology	Pa.	A.M. 1949, Marshall College	Mass
Conti, John William A.B. 1951, Bowdoin College	Maine	Cressy, Joseph Chester, Jr. A.B. 1951, Yale University	Va.
Conway, Bryant Wayland A.B. 1952, Louisiana State University	La.	Crickenberger, Lisa LeRoy B.F.E. 1952, The George Washington University	Hawaii
Coon, Elvin Ralph, Jr. B.S. 1949, University of Michigan	W.Va.	Crockett, Wendell Ryder A.B. 1951, Western Michigan College of Education	S.C.
Cooper, Eugene Stephen B.F.E. 1950, Cornell University	N.Y.	Cronan, William Joseph, Jr. B.S. 1949, College of Charleston	D.C.
Cooper, George Hunter B.M.E. 1951, The George Washington University	Va.	Crowley, Robert Benjamin B.C.E. 1949, University of Idaho	Idaho
Corbin, Douglas Tenny B.S. 1950, St. Lawrence University	N.Y.	Crowley, Francis Joseph B.S. 1949, Norwich University	Va.
Corey, Alexander A.B. 1952, Harvard University	N.Y.	Crowley, James Washington A.B. 1951, The George Washington University	Idaho
Corrigan, James Ernest B.S. 1950, Florida State University	D.C.	Crowther, James Wesley B.S. 1952, Utah State Agricultural College	N.C.
Cosch, Raymond H. A.B. 1948, University of California at Los Angeles	D.C.	Crumpler, Roland LL.B. 1952, The George Washington University	Va.
Coston, John Henry A.B. 1950, University of Cincinnati	Va.	Cullen, Garrett Joseph, Jr. B.S. 1949, Boston College	D.C.
Courtois, George Paulino A.B. 1951, University of California at Los Angeles	D.C.	Curry, Rylee Quentin A.B. 1951, The George Washington University	Ohio
Craig, James Carl, Jr. B.S. 1947, West Virginia Wesleyan College	Md.	Curtis, Allen Benjamin B.C.E. 1951, Fern College	N.Y.
M.S. 1947, Ph.D. 1949, University of Delaware		Curtis, Stanley Gilbert LL.B. 1951, St. John's University	Va.
Craig, Joseph Patrick A.B. 1949, St. Ambrose College	Md.	Cykowski, Stanley A.B. 1947, University of Massachusetts	Del.
Craig, Samuel Wesley A.B. 1951, University of Denver	S.D.	Czajkowski, Stanley Thomas B.S. 1951, University of Delaware	

D			Difore, Joseph Andrew	D.C.
Daggett, John Tobey, Jr.	Mass.	B.C.E. 1949, Manhattan College	Dilchay, Thomas Jefferson, Jr.	Texas
A.B. 1951, Bowdoin College		B.B.A. 1947, A.M. 1949, Baylor University	J.D. 1952, The George Washington University	N.C.
Dahl, Lawrence Joseph	Minn.		Dixon, Benjamin Franklin III	Md
B.M.E. 1943, A.B. 1950, University of Minnesota			A.B. 1939, University of North Carolina	
Dameyer, Richard Welton	Wash.		Dixon, Robert Galloway, Jr.	
A.B. 1947, University of Washington			A.B. 1943, Ph.D. 1947, Syracuse University	Md
A.M. 1948, Fletcher School of Law and Diplomacy			Dixon, William Denny	
M.B.A. 1950, Harvard University			A.B. 1943, Emory and Henry College	Va.
Daniel, Sidney Theodore	Va.		L.L.B. 1948, University of Richmond	
A.B. 1942, New York University			diZerega, Thomas William	
Darling, Joseph Warren	Fla.		A.B. 1953, Municipal University of Wichita	D.C.
B.S. 1911, Harvard University			Doan, Robert Lloyd	
M.B.A. 1914, University of Pennsylvania			B.S. 1947, Indiana University	
Daugherty, Otto Hill, Jr.	Okla.		M.S. 1950, University of Illinois	Va.
B.S. 1951, American University			Dodd, Harold Gregory	N.Y.
Davenport, Thomas Ira	Md.		Dodd, Richard Francis	
B.S. 1944, 1947, M.S. 1941, Pennsylvania State College			A.B. 1952, Syracuse University	D.C.
Davis, Carl Clell	Va.		Dodge, Edward Wadhams	Md
B.S. 1942, Oklahoma Agricultural and Mechanical College			B.S. 1950, Georgetown University	
L.L.B. 1949, University of Oklahoma			Doherty, Robert Allen	Texas
L.L.M. 1951, The George Washington University			B.S. 1950, University of Idaho	
Davis, Lomer Nathaniel	Va.		Dominquez, John Francis	Nebr.
A.B. 1942, Marietta College			A.B. 1951, Southeastern State College	
Davis, Olga	N.Y.		Donahue, Edward Brennan	
B.S. 1949, Columbia University			B.S. in M.E. 1940, South Dakota State College of Agriculture and Mechanic Arts	D.C.
Davis, Paul Sprague	Ill.		Donnelly, William James, Jr.	
A.B. 1950, Harvard University			L.L.B. 1950, The George Washington University	D.C.
J.D. 1952, University of Chicago			Domichar, John Francis	N.Y.
L.L.M. 1952, Catholic University of America			A.B. 1951, Catholic University of America	
Davis, William Henry	Pa.		Doyle, Edward Joseph	Colo.
A.B. 1951, Bowdoin College			B.S. 1950, Syracuse University	
Dean, Hazen Stewart, Jr.	Va.		Drake, Hans Hess	
B.S. 1947, University of Illinois			B.S. in E.E. 1950, University of Colorado	Va.
DeCaro, Francis M.	N.Y.		Drake, John G.	
A.B. 1951, Syracuse University			B.S. 1950, American University	Va.
DeCazze, Everett Thomas	N.Y.		Draxler, Julian Roger	N.Y.
B.S. 1949, Massachusetts Institute of Technology			B.L.F. 1948, Ohio State University	
DeGarny, Robert Edward	Ky.		Driscoll, William John	D.C.
B.C.E. 1948, University of Louisville			A.B. 1953, Manhattan College	
deLewy, Aphons Johannes Maria	D.C.		Dubois, Bernard Andre	
J.D. 1948, University of Utrecht, The Netherlands			A.B. 1948, L.L.B. 1945, University of Pennsylvania	Texas
DeLo, Anthony Peter	Va.		Dunn, Allison Burton	N.C.
B.S., St. John's University			A.B. 1950, University of Texas	
Derrickson, Lloyd James	D.C.		Dunn, Edward M. Donald, Jr.	D.C.
A.B. 1947, Kenyon College			B.S. 1941, University of North Carolina	
DeStavore, Hamilton	D.C.		Dyer, Richard Hutchins	Md
A.B. 1946, Yale University			A.B. 1953, Yale University	
L.L.B. 1948, Harvard University			Dysland, Robert Carroll	
L.L.M. 1951, McGill University				E
DeTaroni, Marlon William	Mich.			D.C.
A.B. 1951, University of Michigan			Early, William Norman	
DeTark, Phil Heson	Md.		A.B. 1951, The George Washington University	Calif.
A.B. 1954, The George Washington University			Eastman, Robert Emerson	D.C.
Deuber, Frederick Joe	Ohio		B.S. 1946, U. S. Naval Academy	
B.S. 1953, Ohio State University			Ebert, Eugene	
Dial, Blackwell Williams	Md.		A.B. 1952, The George Washington University	
A.B. 1949, University of Wyoming				
Dick, Mark Alexander	Pa.			
B.S. 1941, Pennsylvania State College				
Dickson, Mary Joann	N.J.			
B.S. 1951, Rider College				
Diers, Walter Eugene	Pa.			
B.S. 1952, Massachusetts Institute of Technology				

Echegaray, Miguel de A.B. 1922, The George Washington University	D.C.	Fickey, Charles Joseph A.B. 1923, West Virginia University	W.Va.
Eckensperger, William Henry, Jr. A.B. 1931, Monmouth College	Pa.	Fichter, Donald Henry B.S. in M.E. 1949, University of Notre Dame	Ill.
Edelstein, Theodore Edward A.B. 1922, The George Washington University	D.C.	Field, Alexander Raymond B.A. 1922, University of Michigan	N.Y.
Elton, Reuben J.D. 1926, University of Vyntas the Great, Lithuania	D.C.	Finch, Walter Gilbert B.L. 1926, M.B. 1930, Johns Hopkins University	Md.
Eglinton, Arthur Richard B.Ch.E. 1951, University of Delaware	Ohio	LL.B. 1948, M.B.A. 1949, Temple University	
Elias, George, Jr. A.B. 1929, Western Reserve University	W.Va.	LL.M. 1949, The George Washington University	
Ellenbogen, Fay A.B. 1948, University of Pittsburgh	Pa.	Fink, Jules Verne A.B. 1949, LL.B. 1952, The George Washington University	D.C.
Ellison, William James B.S. 1948, California Institute of Technology	D.C.	Finn, John Louis B.S. 1942, LL.B. 1949, Georgetown University	Pa.
LL.B. 1951, University of San Francisco		First, Stanley Alfred A.B. 1949, University of Miami	D.C.
Ellis, John Cole A.B. 1940, Yale University	Va.	Fish, Jerome Saul van A.B. 1931, Berea College	Ky.
Evans, Randall George B.M.E. 1951, Purdue University	Ohio	Fraser, William Leo B.C.E. 1951, University of Detroit	Mich.
Evans, John Williamson B.C.E. 1949, University of Illinois	Va.	Fitts, Nathan Cheney A.B. 1929, Amherst College	Mass.
Everett, Salman Isaac B.S. 1950, University of Maryland	Md.	LL.B. 1948, Harvard University	
Evans, Barbara Rogen A.B. 1932, College of Wooster	Va.	Flather, Alfred Chester, Jr. B.S. 1952, Wason Teachers College	D.C.
Everett, Franklin Milton B.S. 1950, The George Washington University	D.C.	Fleming, Maurice Carl A.B. 1942, Western Maryland College	Md.
EWELL, John Francis B.S. in C.E. 1946, Virginia Military Institute	Va.	A.M. 1958, I.J.D. 1952, Columbia University	
		Ph.D. 1942, New York University	
Falk, Florence A.B. in Govt. 1948, The George Washington University	Va.	Flint, Marshall Lewis B.S. 1949, University of California	Calif.
Fallon, Eugene Brady B.S. 1944, U. S. Naval Academy	N.Y.	Floeken, Paul Jay A.B. 1941, Lebanon Valley College	Pa.
Farnes, Wallace Darwin A.B. 1937, Idaho State College	Md.	Flynn, George Joseph, Jr. F.M. 1939, University of Minnesota	Md.
Farrington, Charles Jerome, Jr. A.B. 1931, University of Arizona	Ariz.	Foldenauer, Robert Carl A.B. in Govt. 1933, The George Washington University	D.C.
Fata, Frederick Arthur B.S. 1946, University of Minnesota	Calif.	Folke, John Walker A.B. 1947, Yale University	Va.
Fawcett, Bernard Thomas A.B. 1949, Colgate University	Va.	Foster, Herman B.C.E. 1936, College of the City of New York	N.Y.
Fay, Richard Joseph A.B. 1951, College of the Holy Cross	D.C.	Foster, Thomas Russell B.M.E. 1947, Georgia Institute of Technology	Va.
Feldt, William Jerry A.B. 1950, LL.B. 1952, University of South Carolina	S.C.	Foy, Allen Bernard A.B. 1951, University of Maryland	Md.
Feldt, Frank A.B. 1950, College of the City of New York	N.Y.	France, Clyde Douglas A.B. 1939, Washington Missionary College	Md.
LL.B. 1942, Fordham University		Franklin, Alfred Carl A.B. 1949, University of Virginia	Ohio
Fendrick, Donald I. B.S. 1952, Rutgers University	Pa.	Franklin, Rufus Matsson B.C.E. 1947, Massachusetts Institute of Technology	R.I.
Fennick, Edward Gulgater, Jr. A.B. 1950, University of Virginia	Va.	Frane, John Henry B.S. 1948, University of Notre Dame	Ill.
Ferguson, Glenn Walker A.B. 1950, M.B.A. 1951, Cornell University	Md.	LL.B. 1951, Georgetown University	
Ferris, Grace Cecelia A.B. 1944, LL.B. 1950, The George Washington University	R.I.	Fraser, Donald Ross B.S. 1952, University of Toledo	Ohio
		Frazier, Roy Donald B.Ch.E. 1950, University of Texas	Texas
		Fredericks, Richard Paul B.S. 1951, Yale University	N.J.

Freeman, Jack Miller	N.C.	Gerber, Eliot Samuel	Mich.
B.S. 1917, Florida Southern College		A.B. 1951, J.D. 1953, University of Michigan	
Freeman, Richard Alan	Ill.	Gerber, Lloyd M.	Utah
A.B. 1949, University of Chicago		B.S. 1951, Brigham Young University	D.C.
A.B. in Cryst. 1952, The George Washington University		German, Everett Ormest, Jr.	Md.
French, James Hoagland, Jr.	W.Va.	B.S. 1951, Virginia Polytechnic Institute	
A.B. 1952, West Virginia University		Gewirtz, Edwin Norman	D.C.
Frieden, Ralph Walford	Ohio	A.B. 1952, University of Maryland	S.C.
B.S. 1946, Ohio University		Gibbert, Stanley Ormond	
Friedman, Antonette Black	N.J.	Graham, Carroll Lewis	
B.S. 1942, Florida State University		A.B. 1949, A.M. 1950, University of South Carolina	Md.
Friedman, Reuben	D.C.	Gillinger, Robert Wayne	Mass.
B.Ch.E. 1949, College of the City of New York		A.B. 1948, Pennsylvania State College	
A.M. 1950, Columbia University		Gillis, Wellington Albert	
Fritchen, Dean H.	Iowa	A.B. 1946, University of Alabama	
B.S. 1951, University of Iowa		L.L.B. 1942, Duke University	Md.
Frohman, Alice Patricia	D.C.	Gilmore, Francis John	Calif.
A.B. 1952, Wellesley College		A.B. 1951, Georgetown University	
Fugate, Wilbur Lindsay	Va.	Gingery, C. Arden	
A.B. 1944, Davidson College		A.B. 1926, University of California at Los Angeles	
L.L.B. 1947, University of Virginia		L.L.B. 1911, University of Southern California	D.C.
L.L.M. 1951, The George Washington University		L.L.M. 1937, Georgetown University	
Fuller, William Elliott	N.J.	Giordano, Anthony Sam	Wash.
B.S. 1944, U. S. Coast Guard Academy		A.B. 1952, University of Maryland	
J.D. 1952, The George Washington University		Gipple, Jim William	D.C.
		A.B. 1954, The George Washington University	
G		Gjupanovich, Fran Nicholas	
Galloway, Joan Stewart	N.Y.	Doctor of Laws 1922, University of Yugoslavia	Va.
A.B. 1952, Trinity College		Glaser Skalny, Ivan Paul	D.C.
Gapsyski, William George	N.Y.	In Jur. 1911, Comenius University	
B.S. 1947, Union College		Glasgow, Lawrence Gray	N.C.
Garbutt, Eugene James	D.C.	B.S. 1948, Montana School of Mines	
B.S. 1950, University of Wisconsin		Glenn, Ralph Ray	
Garlock, Robert Austin	Va.	A.B. 1947, University of North Carolina	Md.
A.B. 1949, Union College		Gogarty, John Edward	D.C.
A.M. 1952, The George Washington University		B.S. 1952, University of Maryland	
Gardner, Harold Wayne	W.Va.	Goldberg, Alvin Irving	N.Y.
A.B. 1951, West Virginia University		B.S. in Ed. 1941, Boston University	
Gardner, Marshall Closson	Md.	Goldfarb, Kenneth Stanley	
B.S. 1943, M.S. 1950, The George Washington University		B.M.E. 1947, Stevens Institute of Technology	Va.
Garner, Charles Louis	Nev.	Golding, Harold Frederick	Mass.
B.S. in E.E. 1947, University of New Hampshire		B.S. 1951, University of Richmond	
Garrett, Paul Weatherly	Va.	Goldman, Sherman H.	Va.
A.B. 1949, The George Washington University		B.M.E. 1948, Northeastern University	
Gasque, Thomas Nelson	S.C.	Golembe, Carter Harry	D.C.
A.B. 1946, A.M. 1947, University of South Carolina		A.B. 1946, A.M. 1947, Ph.D. 1952, Columbia University	
Gaudet, Richard Austin	N.Y.	Golin, Gerald	Va.
B.M.E. 1947, University of Rochester		A.B. 1952, The George Washington University	
Gautier, Edmundo Emilio	Va.	Goodman, Harold Jacob	Okla.
A.B. 1950, Marshall College		A.B. 1952, University of Richmond	
Gaynor, James Kenneth	Ind.	Goodson, Luke Barrett	Okla.
B.S. 1946, J.D. 1950, Indiana University		A.B. and B.S. 1937, University of Oklahoma	
L.L.M. 1951, The George Washington University		Goodweather, Melvin Gerald	Idaho
Gaynor, Rudolph Joseph	N.Y.	A.B. 1951, University of North Carolina	
B.S. 1952, University of Maryland		Goodwin, Carolyn Ruth	Okla.
Gedrich, Herbert David	Pa.	B.S. 1952, University of Idaho	
A.B. 1949, Pennsylvania State College		Goodwin, George Edward	N.D.
M.B.A. 1951, University of Pennsylvania		B.S. 1948, U. S. Naval Academy	
Generelli, Richard Fleury	D.C.	Gorder, Charles Franklin	
Gentsch, Roger William	N.Y.	B.S. 1947, U. S. Naval Academy	
A.B. 1951, Alfred University			

Gordon, George, Jr. A.B. 1944, Iowa State University	D.C.	Guthrie, William Joseph, Jr. A.B. 1952, The George Washington University	Mass.
Gordon, Albert B.A.L.L. 1944, College of the City of New York	Va.	H	
Gordon, Forest A.B. 1952, The George Washington University	Md.	Habecker, Thomas Benjamin B.S. 1946, Massachusetts Institute of Technology	Md.
Gore, Joan William A.B. 1947, Shepherd College	Va.	Haberstick, Charles Joseph A.B. 1953, College of St. Thomas	Minn.
A.M. in Ed. 1953, The George Washington University		Hammond, Reed Washington B.S. 1941, Utah State Agricultural College	Utah
Gov. Montanelli, Riccardo LL.D. 1949, University of Florence, Italy	D.C.	Hack, Emmott, Earl Svensen A.B. 1952, A.M. 1953, Florida State University	D.C.
S.J.D. 1950, University of Virginia		Hale, Harvey Robert A.B. 1937, State University of Iowa	N.Y.
Grubick, Paul Philip B.S. 1949, Brooklyn College	N.Y.	Hall, Walter George A.B. 1949, The George Washington University	Conn.
Gumbert, William Martin B.L.E. 1949, Georgia Institute of Technology	Ala.	Hall, James Ray B.S. 1945, West Virginia University	W.Va.
LL.B. 1951, The George Washington University		Hall, Charles White A.B. 1953, Williams College	Ind.
Grant, David Franklin B.S. 1953, University of Vermont	Md.	Hamaguchi, Akira A.B. 1952, University of Hawaii	Hawaii
Gray, John Alexander A.B. 1951, Dartmouth College	D.C.	Hammond, Louis Andrew A.B. 1953, Marygrove College	Iowa
Gray, Robert Fremont A.B. 1946, M.B.A. 1948, University of Michigan	Va.	Hammond, Thomas Raymond, Jr. A.B. 1949, University of Rochester	N.Y.
Greaves, Thomas Francis A.B. 1951, Occidental College	Va.	Hammond, Thomas Milton B.S. 1947, University of Pittsburgh	D.C.
Green, John Taylor A.B. 1949, Louisiana State University	Va.	Hamer, William Joseph B.M.E. 1951, The George Washington University	Pa.
Greener, Richard Leroy A.B. 1950, University of Richmond	Utah	Hansen, Orval Howard A.B. 1946, University of Idaho	Idaho
Greenfield, Bernard Justin A.B. 1941, University of California at Los Angeles	D.C.	Harbison, Lisle Harrison, Jr. A.B. 1948, Washington University	Va.
LL.B. 1946, University of Southern California		Hardman, Frances Boone A.B. 1947, Lincoln University	Ohio
Greer, Thomas Jefferson, Jr. B.S. in Law 1950, The George Washington University	D.C.	Harmeyer, Edward John B.S. 1949, Louisiana State University	Ia.
Greer, Benjamin Franklin B.E.L. 1951, University of Virginia	Va.	Harrison, Marjorie Evelyn H. A.B. 1951, University of Virginia	Va.
Greer, James Edwin B.T.E. 1949, University of Virginia	Va.	Hartman, George Latham B.S. 1947, U. S. Naval Academy	Md.
Greer, John Ann A.B. 1951, University of North Carolina	Ky.	Hartnett, Maurice Mayson III B.S. 1951, University of Delaware	Del.
Greer, Clyde Lamont B.S. 1949, LL.B. 1941, Boston University	Maine	Hazelworth, John Beeman B.S. 1947, M.S. 1949, University of Michigan	D.C.
Greer, Phyllis Pearl B.S. 1946, Miami University	D.C.	Hearshy, James Clark A.B. 1953, University of Tennessee	Va.
Greisman, Phillip B.S. 1952, New York University	N.Y.	J.D. 1952, The George Washington University	
Greer, Herwig Christian LL.D. 1952, University of Freiburg, Germany	Germany	Hearson, William Edmond B.S. in M.E. 1941, Purdue University	Ind.
Greer, Edward George B.S. 1949, M.S. 1951, Purdue University	Ind.	Hek, John Henry A.B. 1941, Pennsylvania State College	Pa.
Greer, John Drott 1950, University of Lyons		A.M. in Govt. 1951, The George Washington University	
A.B. 1951, St. Vincent College	Pa.	Heckert, Jackson Shaffer B.S. 1942, Pennsylvania State College	Md.
Greer, Richard Ivan B.S. 1945, U. S. Naval Academy	Md.	Heckert, John Dalton A.B. 1951, West Virginia University	W.Va.
Greer, John Joseph A.B. 1947, University of Kansas	D.C.	Hedger, William Ellender B.S. 1951, Tulsa College	D.C.
		Hefelinger, Joanne Callery A.B. 1952, Radcliffe College	D.C.
		Heisenberger, Peter Alexander LL.D. 1949, University of Munich, Germany	D.C.

Heider, George Charles Jr. B.S. 1950, University of Maryland	Md.	Holan, James Michael B.S. 1916, Fordham University	N.Y.
Heller, Milton B.S. 1950, The George Washington University	Md.	Houston, Robert Joseph A.B. 1951, The George Washington University	Md.
Hemple, William Ernst A.B. 1952, Syracuse University	D.C.	Howard, William Reed A.B. 1954, The George Washington University	Nebr.
Henderson, Frances Anne A.B. 1937, Barnard College	Md.	Huddle, William David A.B. 1952, Western Maryland College	Md.
Hendrix, Paul Max A.B. 1950, The George Washington University	Ill.	Hughes, Fabian Sebastian A.B. 1949, St. Mary's University	D.C.
Henewald, Lloyd Allen B.E.E. 1950, University of Michigan	Mich.	Hunzaker, Frederick John B.S. 1949, Tufts College	N.J.
Henry, Merton Goodell A.B. 1950, Bowdoin College	Maine	Hurley, Dennis Michael A.B. 1952, Manhattan College	N.Y.
Herbert, Frank Ray A.B. 1951, Middlebury College	D.C.	Hurwaz, Sheldon B.S. 1952, L.L.B. 1951, University of Buffalo	N.Y.
Herman, Sally Ann A.B. 1952, Hood College	N.Y.	Hutchinson, George Edward A.B. 1951, The George Washington University	D.C.
Hersch, Harold Harley A.B. 1951, Bridgewater College	Va.	Hutton, Wallace Francis A.B. 1950, Indiana University	Md.
Hess, Lawrence Eugene, Jr. B.S. 1949, U. S. Naval Academy	Pa.	Hyde, George Richard B.S. 1952, Brigham Young University	Idaho
Heywood, Richard G. B.S. 1951, Kansas State College L.L.B. 1954, Washburn University	Kans.		
Hill, Richard Wayne A.B. 1952, Brigham Young University	Oreg.	I	Va.
Hill, Samuel Claude, Jr. B.A.F. 1952, West Virginia University	W.Va.	Imrie, Mary Brookings B.S. 1944, Northwestern University	Va.
Hiller, William Eugene B.S. 1940, Tulane University	D.C.	Imrie, Walter Curtis B.S. 1946, Rhode Island University A.M. 1949, American University	D.C.
Hirsch, John Rosemont, Jr. A.B. 1954, The George Washington University	D.C.	Iovino, Charles Anthony A.B. 1952, The George Washington University	N.Y.
Hipps, George Orville, Jr. A.B. 1952, Grove City College	W.Va.	Irvine, Eleanor Hood A.B. 1957, Cornell University	Pa.
Hise, William Curtis A.B. 1948, A.M. 1949, University of Illinois	Ill.	Jacovina, Alvin J. A.B. 1950, Pennsylvania State College L.L.B. 1952, University of Pennsylvania	
Hobbs, Vincent Nelson B.E.E. 1951, The George Washington University	D.C.	J	Va.
Hoffland, Paul A.B. 1950, Princeton University	D.C.	Jackson, Anzville, Jr. B.Met. Eng. 1950, Virginia Polytechnic Institute	Md.
Horat, John Edward A.B. 1951, University of Minnesota	Minn.	Jackson, Frank Holbrook B.S. 1918, University of Maryland	Calif.
Holben, Donald Eugene B.S. 1949, U. S. Naval Academy	Wyo.	Jackson, Harold Leo B.S. 1952, California Institute of Technology	Md.
Holford, Donald Lloyd A.B. 1946, University of Virginia	Va.	Jackson, Wade Mosby A.B. 1917, William Jewell College	N.Y.
Holler, Nathan Philip B.S. 1950, College of the City of New York	N.Y.	Jacob, Fred B.E.E. 1948, College of the City of New York	N.Y.
Holles, Elmer Leroy A.B. 1952, Brigham Young University	Idaho	Jacobs, Julius B.S. 1951, Shepherd College	W.Va.
Hollingsworth, John Allen A.B. 1951, University of Virginia	Va.	Jacobson, Richard John A.B. 1951, St. Anselm's College	N.H.
Holt, Arnold A.B. 1951, University of Virginia	Va.	Jaek, Paul Reine, Jr. B.S. 1950, Western Reserve University	Md.
Holtzinger, John Edward, Jr. B.S. 1950, Pennsylvania State College	Pa.	Jannace, James R. A.B. 1954, Fordham University	N.Y.
Holtzinger, Susan Marilyn A.B. 1951, The George Washington University	Pa.	Jans, Fred Carl, Jr. B.S. 1951, University of Maryland	Md.
Honabach, Elmer Wilson A.B. 1955, L.L.B. 1958, Columbia University	Va.	Jaskiewicz, Leonard Albert A.B. 1949, University of Connecticut	Conn.
Hone, Robert E. A.B. 1955, L.L.B. 1958, Columbia University	Maine	Jazzenko, Kiril L.L.B. 1955, University of Belgrade, Yugoslavia	D.C.
Hoores, Charles Dallett B.S. 1951, Haverford College	Md.	Jensen, Homer Mark A.B. 1952, Brigham Young University	Utah

Johnson, Charles Lloyd, Jr. B.L.E. 1952, University of Maryland	Md.	Kelly, Joseph John B.S. 1949, Ohio University	Va.
Johnson, Lee Farnham, Jr. A.B. 1951, University of Colorado	Va.	Kelso, Arthur David, Jr. A.B. 1952, The George Washington University	Md.
Johnson, Marshall Fessan B.S. 1951, University of Maryland	Md.	Kendall, Ralph St. Clair B.S. 1951, Pennsylvania State College	D.C.
Jones, George Jerome A.B. 1951, University of Oklahoma	Ky.	Kenkel, Jola Bonaventura A.B. 1949, Colgate University	Md.
Jones, Norman Wrentham B.S. 1948, University of Scranton	Pa.	Kenkel, Jola Bonaventura LL.B. 1952, The George Washington University	
Jones, Robert Christie B.S., A.B. 1950, University of Florida	D.C.	Kennedy, Joseph Donovan B.S. 1948, Notre Dame University	Md.
Jones, Robert Edward B.S. 1953, University of Maryland	Md.	Kenny, Raymond Joseph B.C.E. 1952, University of Oklahoma	N.Y.
Jones, Thomas Hagh B.C.E. 1952, Michigan College of Mining and Technology	D.C.	Kepner, John Zacher B.S. 1947, Northwestern University	Va.
Judy, Earl Wilson B.S. 1950, West Virginia University	W.Va.	Kern, Thomas Francis B.S. 1948, U. S. Military Academy	D.C.
Jahaz, Andrew Richard B.M.E. 1944, University of Buffalo	Md.	Kerr, Alex Arthur B.S. 1944, U. S. Naval Academy	Wash.
Jackson, Ernest Miller B.M.E. 1950, University of New Hampshire	N.H.	Kerwan, Thomas John B.S. 1940, Pennsylvania State Teachers College, Mansfield	Va.
Jackson, Philip Dexter B.M.E. 1951, Ohio State University	Ohio	Kerr, Arthur Severin B.S. 1951, University of Pennsylvania	D.C.
Jaffee, Bernard Warren B.E.F. 1951, Catholic University of America	D.C.	Kiernan, Frank John LL.B. 1950, Fordham University	N.Y.
K			
Kabatnick, Neil Bernard B.S. 1950, University of Scranton	Pa.	Kim, Chin LL.B. 1951, University of Korea	Korea
Katz, Aaron A.B. 1948, University of Pennsylvania	Pa.	Kim, Hoon Han LL.B. 1949, University of Korea	Korea
Katz, Marvin Sol A.B. 1951, LL.B. 1953, University of Wisconsin	Wis.	Kinard, Robert Alexander B.S. 1950, Hampden-Sydney College	Va.
Katz, Louis B.E.F. 1951, The George Washington University	D.C.	Kinderman, Eugene John B.S. 1951, University of Illinois	Ill.
Katz, Jesse Walter B.S. 1952, Pennsylvania Military College	D.C.	Kindness, Gordon Robertson A.B. 1950, University of Maryland	Md.
Kearson, Julius Joseph B.S. 1952, Pennsylvania Military College	Mass.	Kindness, Thomas Norman A.B. 1951, University of Maryland	Md.
Kear, Samuel B.S. 1949, U. S. Naval Academy	D.C.	King, Elvira Frances A.B. 1949, The George Washington University	N.Y.
Katz, Sherman Aaron A.B. 1950, University of Pittsburgh	Pa.	King, Joseph Mary A.B. 1947, Boston University	Mass.
Kearson, Harry B.S. 1950, Temple University	Pa.	Kinsley, Robert Charles B.S. 1947, Northwestern University	D.C.
Kauf, Kenneth Dale A.B. 1952, Wash. in Municipal University of Topeka	D.C.	Kinsley, William Joseph B.S. 1947, U. S. Naval Academy	Va.
Katz, Alfred Howard A.B. 1951, The George Washington University	N.J.	Kinsley, William Joseph B.S. 1947, U. S. Coast Guard Academy	Pa.
Katz, Bruce Wardo A.B. 1949, A.M. 1951, University of Pittsburgh	W.Va.	Kinsley, Axel B.S. 1950, Ohio State University	D.C.
Kell, Herbert Bruce B.S. 1950, College of William and Mary	Ill.	Klein, David Joel B.C.E. 1952, Cooper Union	D.C.
Kear, Ray Edward A.B. 1949, Miami University	Md.	Kline, Ralph Henry A.B. 1951, The George Washington University	Pa.
Kear, Jefferson Donald B.S. 1951, University of Maryland	D.C.	Kline, Robert Charles B.S. 1951, Pennsylvania State College	Va.
Kear, Raymond Edward A.B. 1947, William Jewell College	Kans.	Kline, Robert Charles B.S. 1949, U. S. Naval Academy	N.D.
Kelly, David Philip B.E.F. 1949, Lehigh University	D.C.	Kline, Gene Lloyd Jr. B.E.F. 1947, Purdue University	Ind.
Kelly, Lee J. A.B. 1950, Texas Christian University	Texas	Kline, Merrill Donaldson, III A.B. in Govt. 1951, The George Washington University	Va.
		Knopp, Edna A.B. 1947, Brooklyn College	D.C.

Knotts, James Owen III	Md.	Lanning, Geoffrey J.	Va.
A.B. 1950, University of Maryland		A.B. 1930, LL.B. 1942, Harvard	
Knowles, Myles Henry	Mich.	University	Md.
A.B. 1949, Michigan State College		Laubacher, Lawrence Edwin	
LL.B. 1952, The George Washington		B.S. in E.E. 1942, The George	
University		Washington University	N.Y.
Kocvara, Stephen	D.C.	Laux, James Joseph	
LL.D. 1921, Charles University,		B.S. 1948, Syracuse University	Md.
Czechoslovakia		Law, Russell Lewis	
Koenig, James Frederick	Calif.	B.S. 1950, Seton Hall University	Mass.
A.B. 1949, University of California at		Leach, Charles Albert	
Los Angeles		B.S. 1950, Springfield College	Md.
Kominsky, John	Pa.	LeClair, Joseph Roland	
B.S. 1950, Pennsylvania State College		B.S. 1948, University of Maine	D.C.
Kornhauser, Alvin	D.C.	Lee, Robert	
A.B. in Govt. 1952, The George		B.S. in M.E. 1940, The George	
Washington University		Washington University	N.Y.
Kostic, Steven	Pa.	Leffowitz, Saul	
A.B. 1951, University of Pittsburgh		B.S. 1940, College of the City of	
Kostka, Fred Paul	R.I.	New York	N.J.
B.M.E. 1942, University of Rhode		Leonard, Lester Carpenter, Jr.	
Island		A.B. 1950, Washington and Lee	
Kramer, Gerson Balfour	D.C.	University	N.Y.
A.B. 1941, Rutgers University		Lerner, Henry Robert	
Kramish, Arvin Morris	D.C.	B.S. in M.E. 1940, College of the	
A.B. 1947, University of Denver		City of New York	La.
Kraus, Jerome	Md.	Levy, Harold Alvin, Jr.	
A.B. 1942, University of Chicago		B.S. 1950, LL.B. 1953, Tulane	
B.S. in E.E. 1947, University of		University	D.C.
Illinois		Levin, Bernard T.	
Krein, Arthur Nicholas	Pa.	B.S. 1940, LL.B. 1952, American	
B.S. 1940, Case Institute of Technology		University	D.C.
Kristofferson, Thomas Edward	D.C.	Levin, Neal Theodore	
B.S. in Eng. 1950, University of		B.S. 1950, University of Virginia	Va.
Michigan		Liberty, Cyril Jean	
Kuemmerling, Ted Denise	Ohio	A.B. in Govt. 1950, The George	
A.B. 1950, Principia College		Washington University	Md.
Kuhl, Arthur Mathias	Mont.	Lincoln, James John	
A.B. in Govt. 1950, The George		B.S. in M.E. 1951, West Virginia	
Washington University		University	Va.
Kump, Mary Gamble	W.Va.	Liebenau, Gerald Louis	
A.B. 1936, West Virginia University		A.B. 1950, Yale University	W.Va.
A.M. 1953, The George Washington		Light, Eber William, Jr.	
University		B.S. 1948, West Virginia University	N.Y.
Kurtz, Philip Ellodee	Md.	Lindner, Thaddeus Alphonse	
B.S. in M.E. 1942, University of		A.B. 1951, The George Washington	
Maryland		University	Md.
Kushner, Alvin Julian	Md.	Lippert, Raymond Franklin	
A.B. 1951, University of Maryland		B.S. in M.E. 1940, The George	
I.		Washington University	Ohio
Labowitz, Allan Marvin	Va.	Lisa, Emanuel Herbert	
B.S. in C.E., B.S. in E.E. 1948, West		B.S. 1949, Ohio State University	Md.
Virginia University		Little, Arthur Ludwig	
Ladd, Culver Sprague, Jr.	Md.	B.S. 1944, Trinity College	
B.S. 1951, University of Maryland		M.B.A. 1947, University of	
Ladner, Irving	D.C.	Pennsylvania	D.C.
A.B. 1955, College of the City of		Loebberg, Alan Sherwood	
New York		B.S. 1950, Georgetown University	Md.
I.D. 1940, The George Washington		Long, William Francis Edward	
University		A.B. 1946, A.M. 1947, The George	
Laffin, Edward John	Calif.	Washington University	Ill.
Lakey, John Edward	Md.	Long, William John	
B.S. 1951, University of Maryland		LL.B. 1926, Illinois Wesleyan	
Landman, Robert Samuel	Va.	University	Pa.
A.B. in Govt. 1951, The George		Lonsdorf, James John	
Washington University		B.S. 1950, University of Scranton	Peru
Lane, Earl Frederick	Iowa	Lopez, Lavalie Maria Esther	
A.B. 1944, Castleton College		A.B. 1959, Thiel College	
Lane, Edward Bookner, Jr.	D.C.	A.M. 1940, Furman University	Calif.
A.B. 1951, University of Maryland		Low, Richard Call	
Lane, Joseph Martin	Ohio	A.B. 1952, Brigham Young University	N.Y.
B.S. 1950, Case Institute of Technology		Low, Robert Allen	
		A.B. 1941, Stanford University	

Lowman, David Daniel A.B. 1949, Stanford University LL.B. 1952, The George Washington University	Va.	Marden, Earle Rollins, Jr. B.S. in M.E. 1951, University of Maryland	Md
Luck, William Bryant A.B. 1948, University of Richmond	Va.	Markel, Erich Hans LL.B. 1948, S.J.D. 1951, University of Erlangen, Germany	Va.
Lucke, Robert Charles A.B. 1948, Catawba College	Md	Marlow, Charles August, Jr. A.B. 1953, The George Washington University	Va.
Lucey, Robert Meredith B.S. 1947, U. S. Naval Academy	Mo	Marmion, Alfred Charles A.B. 1950, Ohio Wesleyan University	N.Y.
Lund, Theodore J. B.M.E. 1948, College of the City of New York	Md	Marsh, Benjamin Franklin A.B. 1951, Bowdoin College	Ohio
Lundin, Carl Edward B.S. 1948, Trinity College LL.B. 1942, Hartford College of Law	Conn.	Marsh, David Monroe A.B. 1951, Yale University	Md
Lutz, Robert Blair A.B. 1949, Dickinson College	Pa	Marsh, Samuel Dennis A.B. 1948, Yale University	D.C.
Lytle, Robert Eugene A.B. 1950, The George Washington University	Texas	Lawrence 1950, Graduate Institute of International Studies, Switzerland	
Lynch, Boyd Hanley A.B. 1951, Fresno State College	Calif.	Marshall, St. Julien Ravenel A.B. 1948, Virginia Military Institute	Va.
Lynch, Charles Stafford B.S. in Ch.E. 1943, Purdue University	Va.	LL.B. 1954, Harvard University	
Lyon, James A. A.B. 1945, A.M. 1950, University of California at Los Angeles	Md	Martin, Daniel Walter A.B. 1946, University of Puerto Rico	Md
		Martin, James Kenneth B.S. in E.E. 1947, U. S. Naval Academy	Va.
M		Martin, Jeffrey Neal A.B. 1950, University of Maine	Maine
Macaulay, Ross Galloway A.B. 1950, Johns Hopkins University	Md	Martin, Watt Nicholas LL.B. 1950, A.B. 1952, The George Washington University	N.C.
Madden, Ernest William, Jr. J.D. 1949, University of North Carolina	N.C.	Mason, Harry Wesley, Jr. A.B. 1951, American University	Md
MacKibby, Lawrence Hamilton B.S. in Comm. 1948, University of North Carolina	D.C.	Mason, Roy Jerome A.B. 1951, Mexico City College	N.Y.
McManus, Elizabeth Joyce A.B. 1948, Hollins College	Va.	Masterson, James Edwin B.S. 1952, Berea College	Ala.
Madden, Gordon Axel B.S. 1951, University of Utah	Utah	Mattick, Bernard Vernon B.S. 1950, University of Illinois	D.C.
Madden, Ronald Earl B.S. 1952, Brigham Young University	Utah	Matteson, Malcom Gene A.B. 1952, University of Nevada	Nev.
Malin, George Henry B.S. 1950, U. S. Merchant Marine Academy	Md	Matthews, Patrick Cabell B.S. 1951, University of Virginia	Va.
Malone, Leonard Nicholas A.B. 1951, University of Connecticut	Conn.	Maves, Ronald Wayne B.S. in M.E. 1951, Kansas State College of Agriculture and Applied Science	Kans.
Malson, Paul B.S. 1949, Lehigh University	Pa	McAnelly, Shelton Bisler B.S. 1942, Louisiana State University	Va.
LL.B. 1952, University of Pennsylvania		McBride, Willard Carlos B.S. 1948, University of Maryland	Del.
Malin, Jack A.B. in Govt. 1951, The George Washington University	D.C.	McCarron, Matthew Joseph LL.B. 1949, St. John's University	N.Y.
Malone, Francis Richard B.S. 1951, The George Washington University	D.C.	McClure, William Pennington B.S. 1949, University of Pennsylvania	Md
Malink, Julia B.S. in E.E. 1949, Lehigh University	W. Va.	LL.B. 1951, The George Washington University	
Malone, Philip Austin A.B. 1952, Yale University	Pa	McCorkel, Mary Ellen A.B. 1946, The George Washington University	Va.
Malone, Martin Joseph A.B. 1950, Catholic University of America		McCurry, William Smith, Jr. B.S. 1948, University of South Carolina	Md
Marione, Joseph Anthony, Jr. A.B. 1951, Brigham Young University	Utah	McDonough, Raymond John LL.B. 1951, The George Washington University	N.Y.
Mariche, Michael, Jr. A.B. 1950, Dartmouth College	D.C.	McFwee, Charles Richard A.B. 1949, Glenville State College	W. Va.
		McGee, Charles Edward Ed.B. 1954, Northern Illinois State Teachers College	Md

McGee, Robert Phillip	Va.	Mew, Vera Ellen	Ga.
B.S. in C.E. 1950, Virginia Polytechnic Institute		A.B. 1949, University of Georgia	Minn.
McGinty, John Joseph	D.C.	Michaud, John Byron	Fla.
A.B. 1926, Pennsylvania State College		A.B. 1950, University of Minnesota	
LL.M. 1941, Georgetown University		Michell, Robert William	D.C.
McGlynn, Gerald Edward, Jr.	Va.	B.M.E. 1950, New York University	
B.S. in Eng. 1951, Iowa State College of Agriculture and Mechanic Arts		Milestone, Gordon Krupsaw	Idaho
McGraw, Doonan Dwight	Va.	B.S. 1949, M.S. 1951, Massachusetts Institute of Technology	
B.M.E. 1948, Georgia Institute of Technology		Miller, Edith Homay	D.C.
McGregor, Wallace Holley	D.C.	B.S. 1945, University of Idaho	
A.B. 1951, University of Florida		LL.B. 1946, The George Washington University	
McIntire, Ralph Wellington, Jr.	Md.	Miller, Gerald Joseph	N.Y.
B.S. 1949, University of Pittsburgh		A.B. 1952, The George Washington University	
McIntyre, James Byron	W.Va.	Miller, Kenneth Lyall	Va.
A.B. 1951, Morris-Harvey College		B.S. in E.E. 1951, Tufts College	
McKamey, William	Tenn.	Miller, Paul Jones, Jr.	D.C.
B.S. 1954, East Tennessee State College		B.S. 1929, Mississippi State College	
McKay, Emerald Raleigh	Mo.	A.M. 1941, American University	
B.S. 1942, Northwest Missouri State College		Miller, Richard Glen	D.C.
McKee, Douglas Robert	N.Y.	B.S. 1949, West Virginia University	
B.M.E. 1951, Rensselaer Polytechnic Institute		Miller, Richard Hanwell	Va.
McKenzie, James Williams	Va.	A.B. 1950, Brown University	
B.S. in C.E. 1940, Purdue University		Miller, Wilbert Thomas, Jr.	Mass.
McKinney, William Butler	Md.	B.S. 1949, University of Maryland	
B.C.E. 1951, University of Maryland		Milliken, Ruckin Allen	
McLennan, John Skelton	Ark.	B.S. in E.E. 1950, Northeastern University	Va.
McManus, Edward John	N.Y.	Mills, David Everett	
B.S. 1942, St. John's University		A.B. 1950, University of Delaware	
McMath, Raymond Neal	Ala.	LL.B. 1951, Georgetown University	Va.
B.S. 1953, University of Alabama		Mills, Hayden William	Md.
McNamara, Richard Vaughan	Iowa	B.S. 1950, University of Kentucky	
A.B. 1954, The George Washington University		Mitchell, America	N.Y.
McNeil, Donald Eugene	Mich.	A.B. 1944, Vanderbilt University	
A.B. 1950, A.M. 1951, University of Michigan		Moelis, Herbert Louis	Va.
Mescham, Vennor L., Jr.	Md.	B.S. 1953, University of Pennsylvania	
B.S. 1944, Brigham Young University		Mollet, Meredith Elizabeth	Va.
Meade, Irving Walden	Ill.	A.B. 1949, The George Washington University	
A.B. 1948, Grinnell College		Monahan, Thomas Vincent	D.C.
Meador, Robert Eugene	D.C.	B.S. 1947, U.S. Military Academy	
A.B. 1952, University of Michigan		LL.B. 1951, University of Virginia	
McGinnis, Walter Morplace	Fla.	Mondschein, Earl Jay	Mich.
B.S. 1947, U.S. Naval Academy		A.B. 1951, The George Washington University	
Meier, Julius Conrad	Va.	Monsma, Edwin John	Calif.
B.S. in E.E. 1950, Clarkson College of Technology		A.B. 1953, Colby College	
Meiner, Charles Edward	Fla.	Moore, Carlisle Martin	Utah
B.S. in F.S. 1952, Georgetown University		B.S. 1950, LL.B. 1953, University of California	
Meland, Creighton Roland	Md.	Moore, Douglas Meek	S.C.
B.S. in E.E. 1952, University of Wisconsin		A.B. 1949, LL.B. 1951, University of Utah	
Menzies, Charles LeRoy	Md.	Moore, Henry McDonald	Va.
Messing, Charles Eugene	Md.	A.B. 1951, The Citadel	
Meredith, Lynn Sabanek	D.C.	Moore, Martin Anne	Md.
B.S. 1944, Pacific University		A.B. 1949, Bethesda College	
Merrim, Anne Whitfield	Mass.	A.M. 1949, University of Wisconsin	
A.B. 1955, The George Washington University		Morgan, Robert Edward	Calif.
Merow, James Forbes	N.Y.	B.S. in Eng. 1950, The George Washington University	
A.B. 1951, The George Washington University		Morin, Joseph Evans Professor	N.I.
Merriam, Richard Matmus	Ill.	A.R. 1942, Stanford University	
B.S. in E.E. 1950, Milwaukee School of Engineering		Morley, John Roy Jr.	D.C.
Merrin, John Chester	D.C.	A.B. 1949, Marietta College	
A.B. 1950, University of Maryland		Morrison, James Robert	Md.
		B.S. in Eng. 1951, The George Washington University	
		Morstein, Stanley Irwin	
		B.S. 1951, University of Maryland	

Ontko, Jaroslav George	D.C.	Phelan, Charles Scott	Va.
A.B. 1939, Columbia University		B.S. in E.E. 1949, Pennsylvania State College	
Osborne, Dorothy Arnold	Md.	Phillips, Jack Lyle	Idaho
A.B. 1944, Southern Methodist University		A.B. 1930, Idaho State College	Iowa
Osborne, Glen Freelon, Jr.	Fla.	Phillips, Leonard Bradwell	Ga.
A.B. 1951, Rollins College		A.B. 1951, Yale University	
Osman, Vera Herta	D.C.	Phillips, Thomas Madison	
Dr. Jur. 1942, University of Vienna		B.L. 1952, Georgia Institute of Technology	Va.
Otero, Antonio	Puerto Rico	Pickett, Jack Milton	
A.B. 1942, University of Puerto Rico		A.B. in Govt. 1940, The George Washington University	N.C.
Ott, Wilbur M.	D.C.	Pierce, Stanley William	
A.B. 1951, Pennsylvania State College		B.S. 1951, University of Utah	Pa.
Osvensk, Glenn S.	D.C.	Pelore, Robert Lawrence	
B.S. 1951, University of Oklahoma		A.B. 1952, Gettysburg College	Md.
P		Pincus, Arthur	
Padrick, Jack Omega	Wash.	A.B. in Govt. 1948, The George Washington University	Md.
A.B. 1952, Washington State College		Pincus, William	
Painter, Richard Elmer	D.C.	A.B. 1941, Brooklyn College	
B.S. 1951, University of Maryland		A.M. 1948, American University	Md.
Paley, David R.	N.Y.	Pineas, Roger	
A.B. 1949, LL.B. 1951, New York University		A.B. 1942, University of Michigan	Md.
Parkes, James Lloyd	Md.	Pinkham, Richard Collins	
A.B. 1949, The George Washington University		B.S. in Ch.E. 1948, Northeastern University	N.Y.
Patnaude, Edmond Thomas	Va.	Pitt, Vincent P.	
B.S. in E.E. 1948, Rensselaer Polytechnic Institute		B.S. 1949, B.C.L. 1952, College of William and Mary	N.C.
Patterson, Duane Lester	Ohio	Pittman, Mary Thomas	N.H.
A.B. 1950, Denison University		A.B. 1948, Decker University	
Pattison, Hubert Allen, Jr.	Md.	Plante, Norman Anthony	
B.S. 1950, Missouri State College		A.B. 1950, University of New Hampshire	Va.
Patton, Arthur Gordon	Va.	Pletcher, Ralph Weldon	W.Va.
A.B. 1946, Yale University		B.S. 1948, University of Maryland	
LL.B. 1950, The George Washington University		Plevin, Leon Marvin	W.Va.
Pauloli, Eugene Bernard	Va.	A.B. 1951, West Virginia University	
A.B. 1945, LL.B. 1951, The George Washington University		Ploake, Jack Pitt	
Paulowski, Carl Joseph	N.Y.	B.S. in E.S. 1949, West Virginia University	Conn.
B.Chem. 1958, Cornell University		Porter, William Matthews	
Pearce, Isa Hensley	D.C.	A.B. 1950, University of Connecticut	Mass.
A.B. 1951, The George Washington University		Prest, James Thomas Morris	Va.
Pelora, Eugene D.	Pa.	A.B. 1952, Amherst College	
B.S. 1951, Georgetown University		Price, Hoyt Glenn	
Pegan, John Robert	Md.	A.B. 1951, The George Washington University	Tenn.
B.S. 1949, Washington University		Price, James Travis	R.I.
Pelzer, Arthur A.	Md.	Proctor, Donald Garfield	Md.
LL.B. 1950, The George Washington University		B.S. in B.A. 1951, University of Florida	
Perry, William Dial	D.C.	Proctor, Dorothy South	
A.B. 1951, Princeton University		A.B. 1943, Northwestern at Memphis	
Peseli, Benito Martin	D.C.	A.M. 1951, The George Washington University	N.C.
LL.B. 1941, LL.D. 1942, University of Zagreb, Yugoslavia		Puett, William Nelson	Ky.
Ph.D. 1950, Georgetown University		Putnam, Herman Russell	
Peterson, Milton Maurice	Va.	A.B. 1945, Smith College	
B.S. 1941, Central Michigan College of Education		Q	Conn.
M.S. 1943, University of Michigan		Quill, John Joseph	
Petters, Sofia Pauline	Va.	A.B. 1950, Ohio Wesleyan University	Mass.
A.B. 1948, University of North Carolina		Quinlan, Ruth Elizabeth	
Pettigrew, Jamie Lucille	D.C.	A.B. 1951, The George Washington University	
A.B. in Ed. 1947, A.M. in Ed. 1951, The George Washington University		Quisenberry, John Acum	
Peyton, David Wakefield	Wash.	A.B. 1948, Harvard University	Pa.
A.B. 1949, Whitman College		R	
		Radko, Joseph	
		A.B. 1950, Wilkes College	

Raffa, Alfred Conrad B.S. in Ch.E. 1951, University of Massachusetts	D.C.	Riskin, Aaron A.B. in Govt. 1953, The George Washington University	Md.
Ragan, Richard John A.B. 1951, Ohio University	Ohio	Ritchie, Fred Monks B.S. in M.E. 1949, The George Washington University	Md.
Raigh, Maurice Francis A.B. 1951, St. Anselm's College	D.C.	Rivera, Albert B.S. 1952, American University	N.M.
Raisor, Richard Eugene B.S. 1942, Michigan College of Mining and Technology	Mich.	Rizley, Max Devigne A.B. 1950, University of Oklahoma	Okla.
Raisor, Jackson Arthur B.S. in Ch.E. 1950, Lehigh University M.S. in Ch.E. 1951, Georgia Institute of Technology	Conn.	Robbins, David B.S. in E.E. 1950, College of the City of New York	D.C.
Rasch, Raymond Joseph A.B. 1949, Dartmouth College	D.C.	Robbins, Frederick Hersh B.S. 1953, University of Pennsylvania	N.Y.
Rath, Norman Eldridge A.B. 1950, College of William and Mary	Va.	Robbins, Spencer Everett B.S. 1942, U. S. Naval Academy	Calif.
Rasmussen, Frank Joseph B.S. in M.E. 1939, University of Illinois	Md.	Roberts, William Donald B.S. 1941, The George Washington University	Md.
Ratti, Ricardo Allen B.S. 1944, U. S. Coast Guard Academy	Wash.	Roberts, Jack Earl B.S. 1952, Brigham Young University	Ariz.
Reardon, Daniel Joseph B.S. 1947, College of the Holy Cross M.S. 1950, New York State College for Teachers	N.Y.	Roberts, Richard Harper A.B. 1951, Erskine College	S.C.
Reddy, Marieville Sophie B.S. 1950, St. Joseph's College	Pa.	Roberts, Russell Melode A.B. 1951, The George Washington University	D.C.
Reid, Joseph C., Jr. B.S. in E.E. 1948, The George Washington University	Md.	Robinson, Harold LeRoy A.B. in Govt. 1952, The George Washington University	Colo.
Reis, John Vincent B.S. in E.E. 1950, Tufts College	D.C.	Robison, Paul Frederick A.B. 1946, L.L.B. 1947, Washburn Municipal University of Topeka	Alaska
Reis, Joseph Daniel A.B. in Govt. 1952, The George Washington University	D.C.	Rodden, Robert Gerald A.B. 1944, University of Pittsburgh A.M. 1949, American University	Va.
Reis, George Washington B.S. in Ed. 1950, Waynesburg College	Pa.	Rodgers, Elizabeth Bertha A.B. 1948, Smith College	D.C.
Reis, Roger Stanley A.B. 1951, Franklin and Marshall College	Pa.	Rogers, Matthew Edmund B.S. 1948, Columbia University	D.C.
Reis, I. Paul, Jr. A.B. 1948, Cornell University	N.Y.	Rohlfing, Frederick William A.B. 1950, Yale University	Hawaii
Reis, John Carroll B.S. in Aero Eng. 1948, University of Michigan	Fla.	Roskin, Arthur Lawrence A.B. 1952, Dickinson College	Pa.
Reis, Albert Horst B.S. in E.E. 1950, University of Illinois	Ohio	Roskin, Robert Lee B.S. 1950, University of Colorado	Kans.
Reis, Marjorie B.S. 1951, Virginia Polytechnic Institute	Va.	Rosner, Robert Valentin B.S. 1949, University of Pittsburgh	Pa.
Reis, Robert Owen B.S. 1946, Denby College	Mo.	Rospi, John Fletcher III B.S. 1952, University of Utah	D.C.
Reis, Richard Morton B.S. 1954, Marietta College	D.C.	Rosner, Kenneth Bradford B.S. 1952, University of Utah	Utah
Reis, Thomas Samuel A.B. 1951, West Virginia University	Va.	Rose, Neil Messen B.S. in M.E. 1949, Northwestern University	N.J.
Reis, Elin B.S. in Law 1943, University of Illinois	Md.	Rosenfeld, Sidney Nathan B.S. in M.E. 1951, University of Maryland	Va.
Reis, Wallace Don B.S. 1947, University of Chicago B.B.A. 1949, M.B.A., L.L.B. 1952, University of Michigan	Mich.	Rosenfeld, Thomas Harris A.B. 1951, Providence College	R.I.
Reis, Albert Walton B.S. in E.E. 1949, Catholic University of America	Md.	Rosenman, Louis A.B. 1948, Brooklyn College A.M. 1949, New York University	N.Y.
Reis, Miguel Juan A.B. 1951, The George Washington University	Puerto Rico	Rosiel, Lucien Peter A.B. 1951, Harvard University	Mass.
		Roski, Clem Joseph B.S. in E.E. 1944, Pennsylvania State Teachers College, East Stroudsburg	Pa.
		Roskin, Norman A.B. 1951, Thiel College	D.C.
		Ross, Blair Arthur B.S. 1950, U. S. Military Academy	Tenn.
		Ross, Daniel M. Earl A.B. 1946, A.M. in Govt. 1948, The George Washington University	Pa.

Rosa, Mary Romans	Minn.	Sabol, Eugene	N.Y.
A.B. 1949, Grinnell College		B.S. in Ch.E. 1950, Rensselaer Polytechnic Institute	Calif.
Rothberg, Samuel Bernard	N.Y.	Sadler, Frederick T.	
B.S. in Eng. 1951, The George Washington University		B.S. 1944, California Institute of Technology	Ind.
Rothe, Bertha Margarethe	Va.	St. Amand, Joseph Maxim, Jr.	Pa.
A.B. 1914, Syracuse University		B.S. in E.E. 1949, Purdue University	
B.S. 1940, LL.B. 1948, The George Washington University		Salter, Leonard Andrew	Ky.
Rothrock, John Allen, Jr.	Va.	A.B. 1950, King's College, Pa.	
B.S. 1948, Northwestern University		Salys, Edwin Giltner	Va.
Rothwell, Gideon Franklin	Mo.	B.S. 1951, Lincoln Memorial University	
B.S. in M.E. 1949, University of Missouri		Sandeen, Charles Edward	
Rotkin, Irving Jacob	Md.	A.B. 1953, The George Washington University	N.Y.
B.S. in M.E. 1946, Virginia Polytechnic Institute		Saul, Howell Jay	
Rouse, Jules Maynard	Ohio	A.B. 1953, The George Washington University	S.C.
A.B. 1940, University of California at Los Angeles		Saunders, Marshall Bennett, Jr.	
Rozamus, Michael Joseph	D.C.	A.B. 1951, University of South Carolina	D.C.
B.S. 1957, University of New Hampshire		Sawka, Samuel	Ore.
Ruben, Louis Leonard	D.C.	A.B. 1950, Wilkes College	
A.B. 1951, The George Washington University		Sayre, Robert Marion	Va.
Rubin, George	Pa.	A.B. 1950, Willamette College	
A.B. 1953, Pennsylvania State College		Schantz, Wilmer Shelly	N.Y.
Rubinstein, Julius Louis	Ill.	A.B. 1950, The George Washington University	
B.S. 1944, University of Illinois		Schattner, Theodore Jacob	N.Y.
Ruemelf, Robert Frank	Md.	A.B. 1941, College of the City of New York	
B.S. in M.E. 1943, Washington University		Schellin, Eric Paul	Va.
Ruhlman, Terrell Louis	Va.	A.B. 1948, Columbia University	
B.S. in Ch.E. 1949, Pennsylvania State College		Schlemmer, Roy Ramon, Jr.	D.C.
Ruhmann, Ludovik George	D.C.	B.S. in E.E. 1952, The George Washington University	
LL.D. 1925, University of Bratislava		Schmeltzer, Edward	
Ruoff, Edward Gerald	Va.	A.B. 1950, Hunter College	Md.
A.B. 1950, Ohio State University		A.M. 1951, Columbia University	
A.M. 1951, Syracuse University		Schmertz, John Robert	Pa.
Rusia, Armins	D.C.	A.B. 1951, College of the Holy Cross	
M.Jur. 1950, University of Latvia, Riga		Schmitt, Richard Frederick	
Dr. Jur. 1947, UNRRA University, Munich		B.S. 1950, University of Scranton	Utah
Russell, James Miller	D.C.	M.S. 1951, The George Washington University	
A.B. in Govt. 1940, The George Washington University		Schmutz, Charles Andrew	D.C.
Russell, Robert Lee	Kans.	B.S. 1957, University of Utah	
A.B. 1951, University of Nebraska		Schneider, Edwin Roy	N.Y.
Rustigian, Lloyd Armen Garo	R.I.	A.B. 1948, University of Michigan	
A.B. 1952, Providence College		Schnipper, Herbert	
Rutkowski, Stanley Walter	Pa.	A.B. in Govt. 1949, The George Washington University	Colo.
A.B. 1954, Dickinson College		A.M. 1950, University of Michigan	
Ryan, John Clifford	Va.	Schoen, Kenneth Conrad	
A.B. 1947, Iona College		B.S. 1950, LL.B. 1952, University of Denver	Va.
Ryan, John Powell	Md.	Schoen, Richard Davis	
Ryan, William James	Md.	A.B. in Govt. 1949, The George Washington University	D.C.
A.B. 1947, A.M. 1948, Catholic University of America		M.A. 1952, Rutgers University	
Rymer, Thomas Arrington	Md.	Schuler, Joseph Louis	D.C.
B.S. in C.E. 1918, Cornell University		B.S. 1950, Wilson Teachers College	
Rynerson, Wendell Price	Ind.	Schreiber, Hilda	Wash
A.B. 1926, DePaul University		A.B. 1944, The George Washington University	
LL.B. 1930, Indiana University		Schuler, James Lee	
LL.M. 1947, The George Washington University		B.S. 1947, Webb Institute of Naval Architecture and Marine Engineering	D.C.
Sabin, William Cooper	D.C.	Schulman, Margaret Belnick	
B.S. 1951, University of Maryland		A.B. 1950, The George Washington University	
Sabine, Edward Bliss II	D.C.		

Schultheis, Charles William A.B. 1950, University of North Carolina	N.C.	Shutt, Charles Myles A.B. 1952, University of Richmond	Ohio
Schwartz, Philip A.B. 1952, The George Washington University	N.Y.	Siekawicz, Peter LL.D. 1924, University of Lwow, Poland	D.C.
Schwartz, Sol B.S. in Ch.E. 1948, College of the City of New York	N.Y.	Siemien, John Michael B.S. 1950, University of Wisconsin	Wis.
Schwitzer, Hiram George A.B. 1949, Tufts College	D.C.	Siems, Chester Peter, Jr. A.B. 1942, Tufts College	N.Y.
Seacoria, Richard Salvatore B.S. in E.E. 1949, Lafayette College	Pa.	Silver, Richard Abraham A.B. 1943, Boston University	Mass.
Scott, Lawrence Taylor B.S. 1950, Niagara University	D.C.	Silverman, Elly A.B. 1940, New York University	N.Y.
Scribner, Albert Willis B.S. 1949, Northeastern University	D.C.	S.B. 1947, Columbia University	
Seaboard, Paul William A.B. B.S. 1942, Southeast Missouri State College	Mo.	Silverstein, Esther Wasserman A.B. 1944, Hunter College	N.Y.
Sears, Jere William A.B. 1950, Harvard University	Va.	Silverstein, Ruth Elizabeth A.B. 1947, College of the City of New York	N.Y.
Seer, Jay Ketchum A.B. 1945, Yale University	D.C.	Simkins, Raymond Goodwin B.S. 1948, Washington College	Md.
Seeger, Edward Gustave Ph.D. 1942, University of Wisconsin	Va.	LL.B. 1951, University of Pennsylvania	Mass.
Seltzer, Norman B.S. 1948, College of the City of New York	N.Y.	Simmons, Haven Elv A.B. 1947, St. John's College	
Selzer, Orin A.M. 1950, University of Illinois		LL.B. 1951, Harvard University	Va.
A.B. in Govt. 1951, The George Washington University		Sims, Edgar, Jr. B.S. 1951, East Tennessee State College	Mich.
Semmes, David Hopkins A.B. 1949, Princeton University		Singer, Richard Irwin B.S. 1953, Massachusetts Institute of Technology	D.C.
Sessler, Albert Louis, Jr. B.S. 1950, Iowa State College of Agriculture and Mechan. Arts		Sipkov, Iwan Dimitrov LL.B. 1940, University of Sofia, Bulgaria	
Sewell, Torie Hanson B.S. 1942, LL.B. 1948, University of Alabama		J.D. 1947, University of Innsbruck, Austria	
Shaffer, Hugh Madison, Jr. A.B. 1951, University of Maryland		Siskind, Elton Irvin A.B. 1948, Johns Hopkins University	Md.
Shaw, Harold B.S. 1949, University of Connecticut		Skuba, Michael A.B. 1952, New York University	D.C.
Shaw, Jr., Ernest Maurice A.B. 1951, The George Washington University		Slesker, Norman Frederick A.B. 1951, Ohio Wesleyan University	Ohio
Shaw, Jay Edwin A.B. 1952, Washburn Municipal University of Topeka		Smeraldi, Angelo John A.B. 1949, Indiana University	Conn.
Shaw, Roman P. B.S. 1948, LL.B. 1951, Georgetown University		Smith, Donald Joseph B.S. in Ch.E. 1950, Bucknell University	Va.
Shaw, John Harford A.B. 1951, Princeton University		Smith, Finney Clark A.B. 1920, North Texas State Teachers College	Texas
Shaw, Edmund Stillwell A.B. 1952, Haver College		A.M. 1911, University of Texas	
Shaw, John Howard A.B. 1942, W. Plains College		LL.B. 1927, Southern Methodist University	
Shaw, Walter Franklin A.B. 1948, Princeton University		Smith, Gordon W. Garby A.B. 1942, Fashion College	Md.
Shaw, William Robert LL.B. 1952, LL.M. 1954, The George Washington University		A.M. 1947, University of Pennsylvania	
Shaw, William Robert B.S. 1946, University of Wisconsin		Smith, Gladys Fay A.B. 1941, Municipal University of Omaha	Ga.
Shaw, Frank Anderson B.S. in M.E. 1949, College of the City of New York		Smith, James Donald A.B. 1941, Municipal University of Omaha	Nebr.
		A.M. 1944, Western Reserve University	
		Smith, James Eudo A.B. 1952, South Dakota School of Mines	S.D.
		Smith, James Joseph B.S. 1950, Hunter College	Md.
		Smith, Michael Jonathan A.B. 1945, Bryn Mawr College	D.C.
		Smith, Thomas Eugene B.S. in Met. Eng. 1951, University of Missouri	Mo.
		Smith, William Brice A.B. 1952, Lynchburg College	Va.
		Sondar, Marilyn Paper A.B. 1949, University of Maryland	Md.

Socular, Milton Joseph	Md.	Stitely, David Wesley	Md.
B.S. 1950, University of Maryland		B.S. 1949, Pennsylvania State College	Va.
Soffen, Marvin Clarence	D.C.	Stitt, Nelson Alexander	
B.Ch.E. 1940, Cornell University		A.B. 1938, University of Pittsburgh	
Sohr, William Charles	Md.	LL.B. 1952, The George Washington University	D.C.
A.B. 1951, University of Maryland		Stoess, Karl Heintz	
Somerville, Chester Raymond	D.C.	LL.B. 1950, University of Erlangen, Germany	D.C.
A.B. 1950, Washburn Municipal University		Stolwein, Walter	
Spear, Harvey Milton	N.Y.	B.S. 1917, College of the City of New York	Texas
A.B. 1942, Brown University		Stone, Jefferson Henry	Mich.
LL.B. 1948, Harvard University		A.B. 1953, University of Texas	
A.M. 1949, LL.M. 1952, The George Washington University		Stone, Joseph Irving	Ohio
Speck, Luther Price, Jr.	Ind.	A.B. 1950, University of Michigan	
B.S. in E.E. 1945, Purdue University		Stone, Robert Henry	D.C.
Speer, Richard Albert	Ohio	A.B. 1951, Mount Union College	
B.Met.E. 1952, Ohio State University		Stopak, Julius Harvey	N.Y.
Spence, Charles E., Jr.	Idaho	B.S. 1952, University of Maryland	
A.B. in Govt. 1950, The George Washington University		Stom, Matthew	Pa.
Sperling, Allen Aaron	Md.	B.S. 1951, University of Pennsylvania	
A.B. 1946, College of the City of New York		Stoudt, John Matthew	Va.
Spero, Abe	Va.	B.S. in M.E. 1952, Pennsylvania State College	
A.B., LL.B. 1946, The George Washington University		Stover, James Robert	Pa.
Spool, James	N.Y.	B.S. in M.E. 1950, Catholic University of America	
B.E.E. 1950, Cooper Union		Stover, Joseph Glenn	Minn.
Sroka, Edward Andrew	Md.	A.B. 1950, Dickinson College	
B.S. 1941, Purdue University		Strand, Harold Warren	D.C.
Stahl, Seymour	D.C.	A.B. 1949, St. Olaf College	
B.S. 1949, University of Miami		A.M. 1950, University of Wisconsin	D.C.
Stallsmith, William Paul, Jr.	Md.	Strasser, Robert Edward	
A.B. 1950, The George Washington University		B.S. in E.E. 1950, Pennsylvania State College	Pa.
Staring, Ralphine Ronald	Oreg.	Streinz, Clare J.	
A.B. 1917, University of Oregon		LL.B. 1940, LL.M. 1950, The George Washington University	D.C.
A.M. 1941, Louisiana State University		Stringer, Harry Roy, Jr.	Va.
Starobin, Abraham Fred	Md.	A.B. 1951, University of Delaware	
B.S. in E.E. 1950, University of Maryland		Strong, Stuart Beall	Ohio
Steffey, Richard Carlisle	Va.	A.B. 1953, Harvard University	
A.B. 1943, Roanoke College		Stross, Walter Charles	Texas
Stein, Herah	Md.	B.S. 1950, Ohio State University	
Stephens, Alonzo Donald	D.C.	Stroud, Ethan Huston	
B.S. 1951, Drake University		A.B. 1950, Virginia Military Institute	Md.
Stephens, Richard Glenn	Ind.	LL.B. 1950, University of Texas	
B.S. in E.E. 1948, Purdue University		Strupp, Werner	
Stern, Edward Arthur	Fla.	A.B. 1949, The George Washington University	Ind. Va.
A.B. 1952, University of Florida		Stuart, Kenneth Earl	
Stevenson, Malcolm Searle	Maine	Sturtevant, Peter Albert	Md.
A.B. 1950, Bowdoin College		A.B. 1951, Rollins College	
Stewart, Clark Berry	Md.	Sullivan, Eugene Francis	Pa.
B.M.E. 1948, Clemson Agricultural College		B.S. 1948, The George Washington University	
Stewart, Milton David	Va.	Summerville, David Harold	D.C.
A.B. 1941, New York University		A.B. 1952, Grove City College	
M.S. 1942, Columbia University		Surasky, Bernard Arthur	Va.
Stewart, S. Grant	Okla.	A.B. 1950, The George Washington University	
B.S. 1944, University of Nebraska		Sweeney, Vincent Hilary	Puerto Rico
St. James Daniel	Ill.	B.S. 1940, Boston College	
B.S. 1951, Monmouth College		Sweeting, Robert M.	Mo.
M.S. 1952, University of Wisconsin	Pa.	A.B. 1941, University of Illinois	
Stefel, Maurice Ben		Swency, Robert Louis	D.C.
B.S. 1951, University of Pennsylvania	D.C.	A.B. 1948, LL.B. 1951, St. Louis University	
Selmer, Robert Louis	D.C.	Sykes, Grant Russell	
B.E. 1950, Yale University		A.B. 1950, Tulane University	
Stirling, Edwin Tillman		A.M. in Govt. 1951, The George Washington University	
B.S. 1951, The George Washington University	N.Y.		
Seitelman, Joseph			
B.S. in F.E. 1944, Cooper Union			

Sykes, Richard Tucker	Calif.	Tron, Robert Augustus, Jr.	Md.
Taffett, Hans	T	A.B. in Govt. 1951, The George Washington University	
A.B. 1947, The George Washington University	N.Y.	Trush, Edward Harry	N.Y.
Tanaka, Hajime William	Calif.	A.B. 1949, College of the City of New York	
A.B. 1950, University of California at Los Angeles		LL.B. 1952, Columbia University	
LL.B. 1953, The George Washington University		Tucker, Simon	Va.
Tamin, James Stanley	Va.	B.S. 1946, College of the City of New York	
A.B. 1958, Northwestern State College of Louisiana		M.P.A. 1941, New York University	
Taylor, Daniel Gerald	Va.	J.D. 1951, The George Washington University	
A.M. 1949, Salem College		Tunnell, Kenneth Welch	Pa.
Taylor, Edward Rathbun	D.C.	A.B. 1952, Cornell University	
A.B. 1947, Lafayette College		Turner, Harry Brose	Idaho
LL.B. 1950, The George Washington University		A.B. 1953, University of Idaho	
Taylor, Francis Alberta	Va.	Turner, Irving	Va.
F.S. 1950, Florida State College		B.S. 1941, LL.B. 1948, Georgetown University	
Taylor, James Robert	Va.	M.S. 1946, The George Washington University	
A.B. 1951, University of Chicago		Turner, Joseph Morton	Oreg.
Taylor, Robert Leslie	D.C.	A.B. 1940, Whitman College	
A.B. 1941, Syracuse University		Turner, Warren Jewett	Maine
Taylor, William Gordon	D.C.	B.S. in Ed. 1948, University of Maine	
B.S. 1950, University of Massachusetts		Tyre, Thomas Edward	D.C.
Tepper, Milton Leo	Va.	B.S. 1951, University of Maryland	
A.B. 1948, A.M. 1939, New York University		U	
Terry, Luke Edward	W.Va.	Ujevich, Hubert Matthew	Va.
B.S. 1948, University of Tennessee		A.B. 1950, Duquesne University	
M.S. 1949, West Virginia University		Underwood, John King, Jr.	Md.
Teiser, Gary Lloyd	Utah	A.B. 1951, University of Alabama	
B.S. 1951, Utah State Agricultural College		Unger, Jess Paul	Ill.
Thomas, Francis DeLashmutz, Jr.	Va.	B.S. 1941, U. S. Military Academy	
A.B. 1953, Dartmouth College		M.S. in C.E. 1949, University of Illinois	
Thomas, Gregory	Md.	Unkenholz, Willard Clifton	Md.
B.S. 1948, Purdue University	Pa.	B.M.E. 1945, College of the City of New York	
Thompson, Garland Parnell	D.C.	Utermohle, John Robert	Md.
Thompson, Londoun L.	W.Va.	B.S. 1952, University of Maryland	
A.B. 1949, West Virginia University		V	
Thompson, Matthew Charles	Va.	Vaillancourt, Wilfred Napoleon	N.H.
B.S. in Ch.E. 1949, Iowa State College of Agriculture and Mechanic Arts		A.B. 1941, University of New Hampshire	
Thompson, William, Jr.	Md.	Valentine, Andrew Jackson	Fla.
A.B. 1951, Harvard University		B.S. 1945, U. S. Naval Academy	
Tinsal, Irving Russell	Va.	Vance, Robert S.	Ala.
A.B. 1952, Wabash College		B.S. 1950, LL.B. 1952, University of Alabama	
Tobias, Robert Cash	Mo.	Van Hise, Louise Marie	N.Y.
A.B. 1951, The George Washington University		A.B. 1946, Bond College	
Tolson, Richard Norman	Mass.	Van Rasmack, Guy Everett	Va.
A.B. 1950, Dartmouth College		A.B. in Govt. 1950, A.M. in Govt. 1951, The George Washington University	
Tolson, Frank Preston	Ga.	Van Sanford, Gordon Myron	D.C.
B.S. 1941, University of Georgia		A.B. in Govt. 1949, The George Washington University	
Townson, Robert Parrish	Va.	Van Winkle, Theodora	Ill.
B.S. 1943, Virginia Polytechnic Institute		A.B. 1950, Southern Illinois University	
LL.B. 1950, University of Richmond		M.S. 1952, Northwestern University	
Townsend, James Marion	Va.	Van Zante, Donald	Iowa
B.S. 1949, University of California at Los Angeles		A.B. 1951, Parsons College	
Town, William Livingston	Ga.	Varner, Berge Kvamme	D.C.
B.S. 1941, U. S. Military Academy		Cand. Jur. 1950, University of Copenhagen	
Town, Daniel Kidder	Texas	Vary, Willis Leavenworth	Va.
B.E.A. 1948, University of Texas		B.F.E. 1951, The George Washington University	
Town, South III	D.C.	Vaughn, John Walter	Mo.
B.S. 1948, University of North Carolina		A.B. 1952, Stanford University	

Vellone, Joseph A.B. 1928, New Jersey State Teachers College, Montclair	N.J.	Wedel, Retford James A.B. 1949, Bethel College Weaver, Aaron A.B. 1948, A.M. 1950, Temple University	Kans. Pa. N.Y.
Vernon, Melvin Calvin, Jr. B.S. 1951, University of Richmond	Va.	Weinstein, Burton Marvin A.B. 1950, Syracuse University	D.C.
Vernon, Richard Louis A.B. 1939, University of Oklahoma	Okla.	Weisblatt, Irving A.B. 1952, The George Washington University	Md.
Vibbard, Warren John A.B. 1949, Hobart College	N.Y.	Weine, Allen Gardner B.S. 1948, The George Washington University	D.C.
Vibellus, Richard John B.S. 1950, University of Illinois	D.C.	Weissman, Marvin Ph.B. 1948, University of Chicago	Okl. Tenn.
Vogel, Ralph Henry B.S. 1949, Harvard University	Va.	Welch, Byron K. Welch, Richard Noel B.S. 1949, Memphis State College	Va.
Von Brand, Theodor Leopold A.B. 1950, Brown University	Md.	Wellington, Peretz A.B. 1950, The George Washington University	Ohio D.C.
Von Kottow, Edegar Matematika 1945, University of Zurich Certificat 1947, Academy of International Law, The Hague Licence en Droit 1948, University of Geneva	D.C.	Wells, Edward Cecil Wensel, Henry Theodore, Jr. A.B. 1947, St. Johns College	D.C.
Vonnesman, Nicholas A. A.B. in Govt. 1949, M.C.L. (A.P.) 1951, The George Washington University	Md.	Werbow, Farrell Roy B.S. 1951, The George Washington University	Md.
W			
Waddell, Mary Jac A.B., B.S. 1944, Carson Newman College	Ala.	Wertz, M. Joel Wolf B.S. in E.E. 1948, Illinois Institute of Technology	Ohio Va.
Waleck, Stanley Joseph A.B. 1950, Catholic University of America	Conn.	Wertz, Charles Robert B.S. 1952, Ohio State University	Va.
Walker, Peter Brockway A.B. 1942, Harvard University	D.C.	West, Norman Ariel A.B. 1940, University of Richmond	N.Y.
Walker, Robert Wladislaw B.S. 1950, U.S. Naval Academy	Okla.	Westcott, Raymond Arthur Westermann, Evan Davison A.B. 1939, Harvard University	Md. Va.
Walker, William David A.B. 1950, Cornell University	D.C.	Wetherbee, Fairland Henry Whale, Arthur Richard B.S. 1945, Northwestern University	N.M.
Wallace, George Caldwell A.B. 1941, University of Pittsburgh	D.C.	White, Carl David A.B. 1950, A.M. 1951, University of New Mexico	Fla.
Wallace, William Thomas A.B. 1951, Emory and Henry College	Md.	White, Edwin Borden, Jr. A.B. 1944, Emory University	Mass.
Walton, Robert Davison B.S. in E.E. 1948, B.S. in B.A. 1949, Leningrad University	Va.	White, Robert Francis B.S. 1951, Northeastern University	Va.
Wallis, Rodman W. A.B. 1944, The George Washington University	Pa.	Whitcomb, Kenneth Tyree, Jr. A.B. 1942, Hendon Simmons University	D.C.
Walter, Charles William B.E.E. 1951, Catholic University of America	Md.	Whitney, Scott Cameron A.B. 1949, University of Nevada L.L.B. 1952, Harvard University	Ala. Tenn.
Warner, Nancy Nellis A.B. 1951, Catholic University of America	D.C.	Wickline, Harry F. Wier, Richard Austin A.B. 1941, University of Texas	Md. D.C.
Warren, Leon Hugh A.B. 1926, Colby College M.D. 1931, University of Pennsylvania	Pa.	Wilkes, Charles Latimer A.B. 1950, Dartmouth College	N.D.
Wasson, Robert Vernon A.B. 1944, The George Washington University	Calif.	Wilkey, James Claiborne, Jr. A.B. 1950, Dartmouth College	N.D.
Waters, Joe Edward B.S. 1950, Georgetown University	Ky.	Williams, Neal Earl, Jr. B.S. 1949, U.S. Coast Guard Academy	Va.
Watson, Jack Wilbur A.B. 1948, State University of Iowa	Iowa	Willingham, Harris E., Jr. B.S. in B.A. 1950, University of Richmond	Md.
Weaver, David Paul A.B. 1945, Washington College	Md.	Wilson, Francis Jerome A.B. 1953, Upsala College	N.C.
Webb, Jack Bassett A.B. 1948, University of Kansas	Mo.	Wilson, James Roy B.S. 1949, University of North Carolina	D.C.
Weller, Arnold Isidor Ph.B. 1940, Marquette University A.M. 1940, Harvard University	Wis.	Wofford, Leon Daniel, Jr. B.S. in C.E. 1952, University of Texas	
Webster, Robert Oswald B.M.E. 1947, Ohio State University	Va.		

The Law School

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Wohlgenuth, Thomas Joseph A.B. 1950, Loyola College	Md.	Y	
Woll, Zev Leopold B.S. 1951, Northwestern University	D.C.	Yates, John Russell, Jr. A.B. 1952, Randolph Macon College	Md.
Wolley, Earl Scott B.S. 1952, Brigham Young University	Va.	Yeager, Philip Beard A.B. 1952, University of Arizona	Va.
Worman, Harold B.S. 1942, College of the City of New York	N.Y.	Young, Francis Wavland B.S. in M.E. 1950, University of Alabama	Ala.
Wood, Charles Bryant B.S. 1951, American University	D.C.	Yurow, John Jesse A.B. 1953, The George Washington University	D.C.
Wood, Harry Eugene LL.B. 1944, The George Washington University	Va.		
Wood, Quentin Howard LL.B. 1949, Boston University	Mich.	Z	
LL.M. 1950, Northwestern University		Zabinger, James Francis B.A.L. 1949, Catholic University of America	D.C.
Woody, David W. B.S. 1942, U. S. Coast Guard Academy	N.Y.	Zadner, Philip Max	Md.
Woolf, James A.B. 1951, Virginia Military Institute	Va.	Zakert, Lloyd Lynn B.S. in M.E. 1950, Purdue University	Va.
Wortinger, George Samuel A.B. 1951, LL.B. 1951, The George Washington University	Md.	Ziegler, Herman Joseph A.B. in Const. 1951, The George Washington University	N.J.
Wray, William Neal B.S. 1952, University of Maryland	D.C.	Zielinski, Frank Edward B.S. 1950, University of Scranton	Pa.
Wrenn, William Richard B.S. 1951, High Point College	Va.	Zietz, Eli B.S. in Ed. 1951, University of Nebraska	Md.
Wright, Dale Alan B.S. 1948, Carnegie Institute of Technology	Pa.	Zinn, Donald	Pa.
LL.B. 1952, The George Washington University		Zoarski, Howard Francis B.S. 1950, University of Maryland	Conn.
Wright, George Rawley A.B. 1951, Washington College	D.C.	Zugel, Mary Jean A.B. 1951, The George Washington University	Md.
Wright, John Grant, Jr. A.B. 1949, Southern Methodist University	Va.	Zummer, Anthony Simon B.S. in M.E. 1950, Purdue University	Ill.
Wright, Benjamin Robert, Jr. A.B. 1952, Harvard University	R.I.	Zyblat, Chester Anthony A.B. 1950, De Paul University	Ill.
Wright, John Walton B.S. in Ed. 1948, Alabama State Teachers College, Troy	Fla.	LL.B. 1952, The George Washington University	

SUMMARIES OF REGISTRATION

SUMMER TERM 1953

FALL AND SPRING TERMS 1953-54

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

United States, Territories, and Possessions

Alabama	13	New Jersey	16
Arizona	3	New Mexico	3
Arkansas	1	New York	103
California	20	North Carolina	11
Colorado	6	North Dakota	3
Connecticut	12	Ohio	30
Delaware	4	Oklahoma	11
District of Columbia	248	Oregon	5
Florida	16	Pennsylvania	83
Georgia	8	Rhode Island	11
Idaho	13	South Carolina	9
Illinois	24	South Dakota	4
Indiana	11	Tennessee	6
Idaho	1	Texas	13
Iowa	10	Utah	17
Kansas	10	Virginia	200
Kentucky	8	Washington	9
Louisiana	3	West Virginia	27
Maine	7	Wisconsin	6
Maryland	198	Wyoming	2
Massachusetts	21	Alaska	1
Michigan	16	Germany	3
Minnesota	8	Hawaii	1
Mississippi	2	India	1
Missouri	15	Iraq	2
Montana	3	Korea	1
Nebraska	6	Peru	3
Nevada	3	Puerto Rico	
New Hampshire	6		

GRADUATES OF COLLEGES REGISTERED IN THE LAW SCHOOL

Alabama College	1	Augustana College	1
Alabama Polytechnic Institute	2	Barnard College	1
Alabama State Teachers College, Troy	1	Baylor University	2
Alabama, University of	9	Belgrade, University of, Yugoslavia	1
Alfred University	1	Berea College	1
American University	11	Bethany College	3
Amherst College	2	Bethel College	6
Arizona State College	1	Boston College	6
Arizona, University of	2	Boston University	6
		Bowdoin College	1

Bratislava, University of.....	1	East Tennessee State College.....	2
Bridgewater College.....	1	Emory and Henry College.....	2
Brigham Young University.....	10	Emory University.....	3
Brooklyn College.....	6	Erlangen, University of, Germany.....	2
Brown University.....	5	Erskine College.....	1
Bryn Mawr College.....	1	Fenn College.....	1
Bucknell University.....	1	Fletcher School of Law and Di-	
Buffalo, University of.....	2	plomacy.....	1
California Institute of Technology.....	5	Florence, University of, Italy.....	1
California, University of.....	3	Florida Southern College.....	1
California, University of at Los Angeles.....	12	Florida State University.....	4
Calvin College.....	1	Florida, University of.....	5
Carleton College.....	1	Fresno State College.....	1
Carnegie Institute of Technology.....	1	Fordham University.....	4
Carson-Newman College.....	1	Fouad I, University of, Egypt.....	1
Case Institute of Technology.....	1	Franklin and Marshall College.....	1
Catawba College.....	4	Freiburg, University of, Germany.....	1
Catholic University of America.....	14	Furman University.....	1
Central Missouri College.....	1	Geneva, University of, Switzerland.....	1
Charles University, Czechoslovakia.....	1	George Washington University, The.....	179
Charleston, College of.....	1	Georgetown University.....	22
Chicago, University of.....	6	Georgia Institute of Technology.....	6
Cincinnati, University of.....	3	Georgia, University of.....	3
Citadel, The.....	1	Gettysburg College.....	2
Clarkson College of Technology.....	2	Glenville State College.....	1
Clemson Agricultural College.....	1	Graduate Institute of International	
Colby College.....	1	Studies, Switzerland.....	1
Colgate University.....	2	Grinnell College.....	2
Colorado State College of Educa-		Grove City College.....	2
tion.....	1	Hampden-Sidney College.....	1
Colorado, University of.....	4	Hardin-Simmons University.....	1
Columbia University.....	19	Hartford College of Law.....	1
Comenius University.....	1	Harvard University.....	17
Connecticut, University of.....	4	Haverford College.....	3
Cooper Union.....	4	Hawaii, University of.....	1
Copenhagen, University of, Den-		High Point College.....	1
mark.....	1	Hubart College.....	1
Cornell University.....	14	Hofstra College.....	2
Dartmouth College.....	7	Hollins College.....	1
Davidson College.....	1	Holy Cross, College of the.....	5
Dartmouth, University of.....	1	Hood College.....	2
Delaware, University of.....	6	Hunter College.....	2
Denison University.....	1	Idaho State College.....	2
Duquesne University.....	7	Idaho, University of.....	5
DePaul University.....	1	Illinois Institute of Technology.....	1
De Pauw University.....	1	Illinois, University of.....	17
Detroit, University of.....	1	Illinois Wesleyan University.....	1
Dickinson College.....	5	Indiana University.....	5
Duke University.....	1	Innsbruck, University of, Austria.....	1
Drexel Institute of Technology.....	1	Iona College.....	1
Duquesne College.....	1	Iowa State College of Agriculture	
Duquesne University.....	3	and Mechanic Arts.....	4
Earlham College.....	1	Iowa, State University of.....	6
	1	Iraqi Law College.....	1
		Johns Hopkins University.....	4

Kalamazoo College	1	New Hampshire, University of...	7
Kansas State College of Agriculture and Applied Science	2	New Jersey State Teachers College, Montclair	1
Kansas, University of	2	New Mexico, University of	1
Kentucky, University of	2	New York, College of the City of	25
Kenyon College	1	New York State College for Teachers	1
King's College, Pa.	1	New York University	14
Korea, University of	2	Niagara University	1
Lake Forest College	1	North Carolina, University of	12
Lafayette College	1	North Texas State Teachers College	1
Lebanon Valley College	1	Northeastern University	3
Lehigh University	6	Northern Illinois State Teachers College	1
Lincoln Memorial University	1	Northwest Missouri State College	1
Loretto Heights College	1	Northwestern State College of Louisiana	2
Louisiana State University	5	Northwestern University	12
Louisville, University of	1	Northwestern University	1
Loyola University	1	Norwich University	1
Lwow, University of, Poland	1	Notre Dame of Maryland, College of	2
Lynchburg College	1	Notre Dame, University of	4
McGill University	1	Occidental College	1
Madras, University of, India	1	Ohio State University	13
Maine, University of	4	Ohio University	6
Manhattan College	3	Ohio Wesleyan University	3
Marietta College	3	Oklahoma Agricultural and Mechanical College	1
Marquette University	2	Oklahoma, University of	7
Marshall College	2	Omaha, Municipal University of	1
Maryland, University of	52	Oregon, University of	1
Massachusetts Institute of Technology	7	Pacific University	1
Massachusetts, University of	3	Paris, University of, France	1
Memphis State College	2	Parsons College	1
Mexico City College	1	Pennsylvania Military College	21
Miami University	3	Pennsylvania State College	2
Miami, University of	5	Pennsylvania State Teachers, East Stroudsburg	1
Michigan College of Mining and Technology	3	Pennsylvania State Teachers College, Mansfield	17
Michigan State College	3	Pennsylvania, University of	11
Michigan, University of	19	Pittsburgh, University of	1
Middlebury College	1	Prague, University of	6
Milwaukee School of Engineering	1	Princeton University	1
Minnesota, University of	6	Principia College	2
Mississippi State College	2	Providence College	2
Mississippi, University of	1	Puerto Rico, University of	12
Missouri, University of	5	Purdue University	2
Monmouth College	2	Radcliffe College	2
Montana School of Mines	1	Randolph-Macon College	6
Montana State University	1	Rensselaer Polytechnic Institute	4
Morningside College	1	Rhode Island, University of	10
Morris-Harvey College	2	Richmond, University of	1
Mount Union College	1	Ricks College	1
Muhlenberg College	3	Rider College	1
Munich, University of, Germany	1		
Nazareth College	1		
Nebraska, University of	2		
Nevada, University of	2		

Roanoke College	2	Union College	3
Rochester Polytechnic Institute ..	1	UNRA University, Munich	1
Rochester, University of	2	U. S. Coast Guard Academy	8
Rollins College	2	U. S. Merchant Marine Academy ..	1
Rutgers University	5	U. S. Military Academy	6
St. Ambrose College	1	U. S. Naval Academy	26
St. Anselm's College	3	Uppsala College	1
St. Francis College	2	Utah State Agricultural College ..	4
St. John's College	2	Utah, University of	11
St. John's University, N. Y.	5	Utrecht, University of, The Neth-	
St. Joseph's College	2	erlands	1
St. Lawrence University	2	Vanderbilt University	2
St. Louis University	1	Vermont, University of	1
St. Mary's University	1	Vienna, University of, Austria ...	1
St. Olaf College	1	Virginia Military Institute	5
St. Thomas, College of	1	Virginia Polytechnic Institute ...	9
St. Vincent College	1	Virginia, University of	15
Salem College	1	Vytautas the Great, University of,	
San Francisco, University of	1	Lithuania	1
San Jose State College	1	Wabash College	1
Seranton, University of	5	Washburn, Municipal University	
Serra Hall University	1	of, Topeka	3
Shepherd College	2	Washington College	2
Shippson College, Iowa	1	Washington and Lee University ..	1
Smith College	2	Washington Missionary College ..	2
Sofia, University of, Bulgaria ...	1	Washington, State College of	2
South Carolina, University of ...	5	Washington University	4
South Dakota School of Mines		Washington, University of	1
and Technology	2	Waynesburg College	1
South Dakota State College of		Webb Institute of Naval Architec-	
Agriculture and Mechanic Arts ..	1	ture	1
Southeast Missouri State College	1	Wellesley College	1
Southern State College	1	Wesleyan University	1
Southern California, University of	2	West Virginia Institute of Tech-	
Southern Illinois University	1	nology	1
Southern Methodist University ..	3	West Virginia University	21
Southern at Memphis	1	Western Maryland College	2
Southern University	2	Western Michigan College of Edu-	
Springfield College	1	cation	1
St. Edward University	5	Western Reserve University	4
Stevens Institute of Technology ..	2	Westminster College	1
Stromberg College	1	Whitman College	2
Sturm University	11	Wichita, Municipal University of ..	1
Tartu, University of, Estonia	1	Wilkes College	2
Tennessee University of	3	Willamette University	1
Texas Christian University	4	William and Mary, College of ...	3
Texas University of	1	William Jewell College	1
Thammasat, University of, Thai-	9	Williams College	2
and		Wilson Teachers College	2
Tulane College	1	Wisconsin, University of	11
Tulane, University of	2	Wofford College	1
Tulsa College	1	Wooster, College of	1
Tulane University	3	Worcester Polytechnic Institute ..	1

THE SCHOOL OF ENGINEERING

1954-55

THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

VOL. LIII

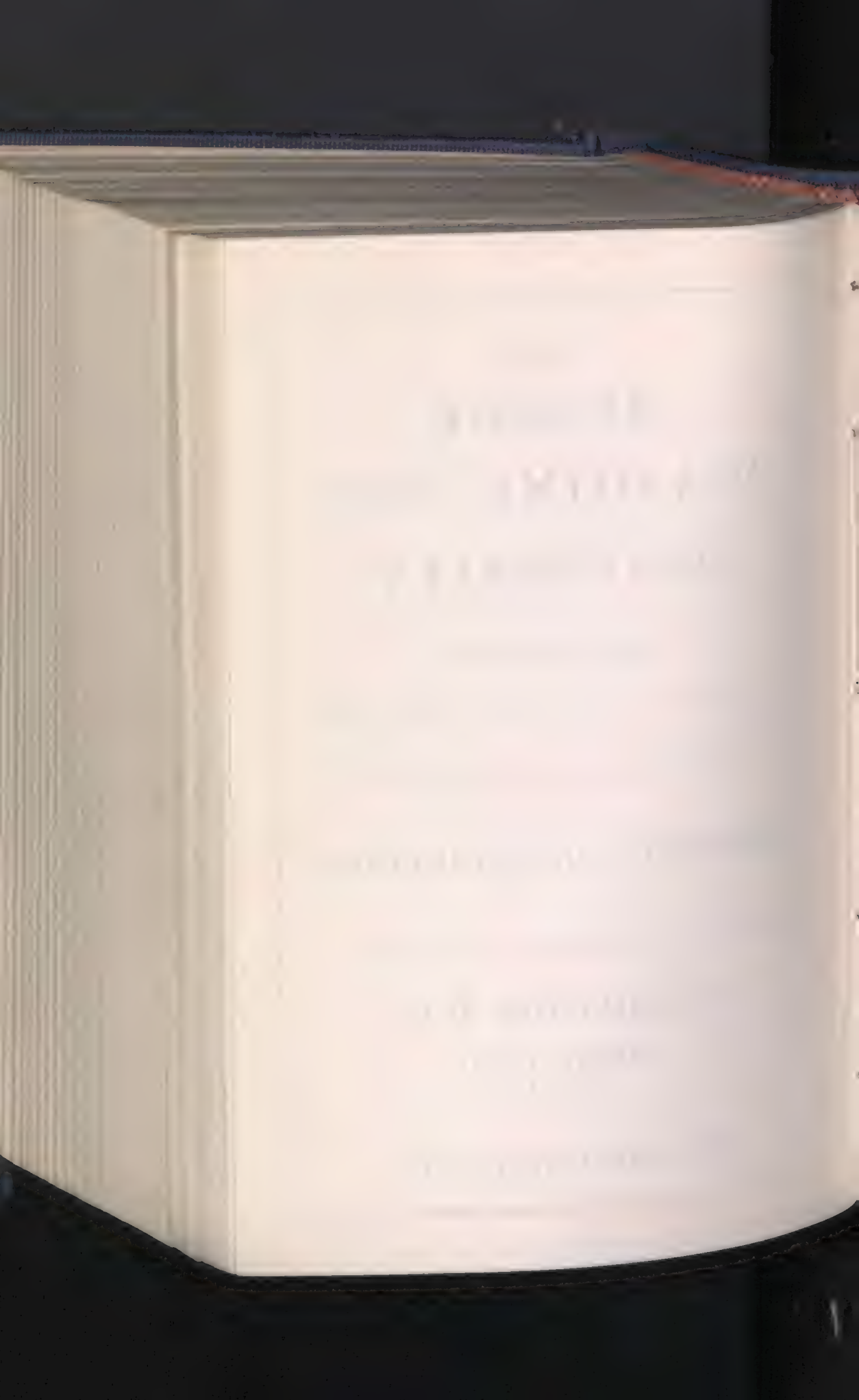
No. 5

THE SCHOOL OF ENGINEERING

WASHINGTON, D. C.

PUBLISHED IN MAY
MCMLIV

BY THE UNIVERSITY



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CALENDAR

1954-55

Date	Day	Occasion
1954		
FALL TERM:		
Sept. 20.....	Monday	Orientation Assembly for all new students
Sept. 21.....	Tuesday	Freshman tests Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Sept. 22.....	Wednesday	Curriculum Assembly for all new students
Sept. 23 and 24....	Thursday and Friday.	Pre-advising, new students
Sept. 27.....	Monday	Registration
Oct. 8.....	Friday	Academic year begins Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in February
Nov. 11.....	Thursday	Fall Convocation. Holiday
Nov. 25-27.....	Thursday through Saturday	Thanksgiving recess
Dec. 20-Jan. 1....	Monday through Saturday	Christmas recess
1955		
Jan. 3.....	Monday	Classes resume Last day for receiving theses of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in February
Jan. 19.....	Wednesday	Last day of classes for the fall term
Jan. 24-Feb. 1....	Monday through Tuesday	Fall term examination period
SPRING TERM:		
Feb. 2.....	Wednesday	Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Feb. 3 and 4.....	Thursday and Friday.	Registration
Feb. 7.....	Monday	Classes resume for the spring term
Feb. 18.....	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in June

Date	Day	Occasion
Feb. 22.....	Tuesday	Winter Convocation. Holiday
April 1.....	Friday	Applications for scholarships for 1955-56 should be filed
April 8-13.....	Friday through	
May 6.....	Wednesday	Easter recess
	Friday	Last day for receiving theses of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in June
May 18.....	Wednesday	Last day of classes for the spring term
May 23-31.....	Monday through	
June 5.....	Tuesday	Spring term examination period
June 8.....	Sunday	Baccalaureate Sermon
Sept. 22 and 23....	Wednesday	Commencement
	Thursday and Friday.	Registration for the fall term of the academic year 1955-56

THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

Robert Vedder Fleming, LL.D., *Chairman*

Newell Windom Ellison, A.B., LL.B., *Secretary*

Clarence Aiken Aspinwall
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 John Edgar Hoover, LL.M., LL.D.
 Frank Atherton Howard, B.S. in M.E., LL.B.
 Evan Howell, LL.B.
 Robert Houghwout Jackson, LL.B., LL.D.
 Alfred Henry Lawson, LL.B.
 John Keown McKee
 Benjamin Mosby McKelway
 *James Matlack Mitchell, A.M.
 *Helen Newman, LL.M.
 Donald D'Arcy Shepard, LL.B.
 Charles Hook Tompkins, D.Eng.
 Walter Rupert Tuckerman, A.B., LL.B., LL.D.
 James Edwin Webb, A.B.
 Alexander Wetmore, Ph.D., Sc.D.
 *Charles Stanley White, M.D., Sc.D.
 Lloyd Bennett Wilson

* Nominated by the alumni.

OFFICERS OF ADMINISTRATION

THE UNIVERSITY

Cloyd Heck Marvin, Ph.D., LL.D., *President of the University*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Dean of Faculties*
Myrna Pauline Sedgwick, A.B., *Administrative Secretary*
Henry William Herzog, B.S., *Treasurer*
Claud Max Farrington, A.M., *Assistant to the President*
Harold Griffith Sutton, M.S., *Director of Admissions*
Fred Everett Nessell, A.B., *Registrar; Secretary of the Faculties*
John Russell Mason, B.S. in L.S., A.M., *Librarian; Curator of Art*
Virginia Randolph Kirkbride, A.M., *Director of Activities for Women*
Don Carlos Faith, Ph.D., *Director of Activities for Men; Director of Veterans Education*
Alan Thomas Deibert, A.M., *Adviser to Students from Foreign Countries*
Burnice Herman Jarman, A.M., Ed.D., *Director of the Summer Sessions*
Daniel LeRay Borden, A.M., M.D., *Director of Health Administration*
Carl Swyter, B.S. in E.E., *Director of Air Science*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Coordinator of Scientific Activities*

THE COLLEGES, SCHOOLS, AND DIVISIONS

George Martin Koehl, A.M., *Acting Dean of the Junior College*
Henry Grattan Doyle, A.M., LL.D., Litt.D., *Dean of Columbian College*
Robert Whitney Bolwell, Ph.D., *Chairman of the Graduate Council*
Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Dean of the School of Medicine*
John Theodore Fey, LL.B., M.B.A., J.S.D., *Dean of the Law School*
Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*
Charles Watson Bliven, M.S., *Dean of the School of Pharmacy*
James Harold Fox, A.M., Ed.D., *Dean of the School of Education*
Arthur Edward Burns, Ph.D., *Dean of the School of Government*
Elmer Louis Kayser, Ph.D., LL.D., *Dean of the Division of University Students*
Warren Reed West, Ph.D., *Dean of the Division of Special Students*
Mitchell Dreese, Ph.D., *Dean of the College of General Studies*
Victor Frederick Ludewig, A.B., B.S., *Superintendent of the University Hospital*
William Lewis Turner, Ph.D., *Assistant Dean of the Junior College*
Carl Bartleson Lavell, A.M., *Assistant Dean in the Junior College*

Calvin Darlington Linton, Ph.D., *Assistant Dean of Columbian College*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*

Louis Harkey Mayo, B.S., LL.B., *Assistant Dean of the Law School*

Joe Lee Jessup, M.B.A., *Assistant Dean in the School of Government*

John Francis Latimer, Ph.D., *Assistant Dean of the College of General Studies; University Marshal*

John Gage Allee, Jr., A.M., *Assistant Dean of the Division of University Students*

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature:—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provision of Washington's will, and the stock that he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of the Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress, on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter, members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a

bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government".

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the college was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Near-by buildings accommodated the School of Medicine and, somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all the colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The endowment of the University is \$3,450,000.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences; two years of pre-professional work; and two-year terminal courses. Each of these curricula leads to the degree of Associate in Arts.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Science in Engineering, and Master of Engineering Administration. It also directs work leading to the professional degrees in the fields of civil, electrical, and mechanical engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration in the fields of General Administration and Governmental Fiscal Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies supplements the adult education pro-

gram of the University through its Off-Campus Division, Campus Division, and Division of Community Services.

The Division of University Students makes available courses for mature students, not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education.

LOCATION

The George Washington University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce,

and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member *ex officio*. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

THE SCHOOL OF ENGINEERING

1954-55

THE SCHOOL OF ENGINEERING

THE FACULTY AND STAFF OF INSTRUCTION *

MARTIN ALEXANDER MASON, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*

GEORGE ABRAHAM

Lecturer in Electrical Engineering

B.S. 1940, Brown University; M.S. 1943, Harvard University. Radio Engineer, R.C.A. 1941; Radio Engineer 1943-45, Head, Science Education 1945-52, Electronic Scientist 1952-. Naval Research Laboratory. Lecturer, University of Maryland 1947-52; Lecturer in Electrical Engineering, The George Washington University 1952-. UNESCO Panel on Educational Radio; Chairman, Intercollegiate Broadcasting System 1940-. Member, APS, IRE, AIEE, AAAS, AAPT, ASEE, Sci. Res. Soc. Am., Sigma Xi.

NORMAN BRUCE AMES

Professor of Electrical Engineering

B.S. in E.E. 1915, Mississippi State College; B.S. in E.E. 1917, Harvard University; B.S. in E.E. 1917, L.L.B. 1928, E.E. 1929, The George Washington University; B.S. in E.E. 1917, M.S. in E.E. 1915, Massachusetts Institute of Technology. Colonel, U.S. Air Force, Director and Secretary, Murphy & Ames, Inc.; Chairman, Montgomery County Charter Committee 1947-50. Instructor to Professor 1920-29, Professor of Electrical Engineering 1929-. The George Washington University. Professional Engineer, Maryland, Fellow, AIEE.

WILLIAM WALTER BALWANZ

Lecturer in Electrical Engineering

B.E.E. 1941, The George Washington University; M.S. in E.E. 1948, University of Maryland. Electronic Engineer, U.S. Naval Air Test Center, Patuxent, Maryland, 1942-46, Electronic Scientist, Naval Research Laboratory 1946-. Lecturer in Electrical Engineering, The George Washington University 1952-. Professional Engineer, Virginia and District of Columbia. Member, AIEE, IRE, AIP, Sigma Tau.

THOMAS BENJAMIN BROWN

Professor of Physics

A.B. 1912, Ph.D. 1916, Cornell University. Assistant Professor to Professor 1917-19, Professor of Physics 1919-. The George Washington University. Member, APS, AAPT, Philosophical Society of Washington, Sigma Xi.

PAUL CRAFTON

Lecturer in Mechanical Engineering

B.M.E. 1944, College of the City of New York. M.S. in M.E. 1950, University of Maryland. Mechanical Engineer, Radio Corporation of America 1944. Head, Mechanical Engineering Section, Security Systems Branch, Naval Research Laboratory 1944-. Lecturer in Mechanical Engineering, The George Washington University 1954-. Professional Engineer, District of Columbia. Member, ASME, Tau Beta Pi.

BENJAMIN CARPENTER CRICKSHANKS

Professor of Mechanical Engineering

B.S. in M.E. 1920, The George Washington University. Editor, Hartford Steam Boiler Inspection and Insurance Company 1923-27. Instructor to Professor 1920-42. Professor of Mechanical Engineering 1942-. The George Washington University. Research Associate, National Bureau of Standards 1928-30. Professional Engineer, District of Columbia. Member, ASME, Sigma Tau.

* The President of the University, The Dean of Faculties of the University, the Dean of the School, Professors, Associate Professors, and Assistant Professors constitute the Faculty.

EDWARD FRENCH DAVIS*Associate in Mechanical Engineering*

B.S. 1935, The George Washington University; M.S. 1941, University of Maryland. Chemical Engineer, Naval Ordnance Laboratory. Research Associate 1942-44. Associate in Mechanical Engineering 1946-. The George Washington University.

RAYMOND PUGH EYMAN*Associate Professor of Civil Engineering*

C.E. 1914, Ohio State University. Deck Officer to Commander 1914-42. Chief, Division of Coastal Surveys 1945-46. U. S. Coast and Geodetic Survey. Associate Professor of Civil Engineering, The George Washington University 1947-. Member, Sigma Xi.

RALPH EDWARD FUHRMAN*Lecturer in Civil Engineering*

B.S. in C.E. 1930, University of Kansas; M.S. in Eng. 1937, Harvard University. Sanitary Engineer, Sewage Treatment Plant, Springfield, Missouri 1933-36; Assistant Superintendent and Superintendent, D. C. Sewage Treatment Plant 1937-. Lecturer in Civil Engineering, The George Washington University 1941-. Professional Eng. reg. Maryland. Member of Interstate Committee on Potomac River Basin. Member, ASCE, APHA, AWWA, Fed. Sew. and Ind. Wastes Assoc., AAAS.

WILLIAM HERBERT GOSSARD*Lecturer in Electrical Engineering*

A.B. 1943, High Point College; M.S. in E.E. 1950, North Carolina State College. U. S. Navy 1943-46, Electronic Scientist, Armed Forces Security Agency 1950-. Instructor, Naval Academy Preparatory School 1946; Lecturer in Electrical Engineering, The George Washington University 1952-. Member, IRE.

CHARLES EDWARD GREELEY*Associate Professor of Mechanical Engineering*

B.S. in M.E. 1937, University of North Dakota. Design Engineer, Fairbanks, Morse and Company 1937-40; Mechanical Engineer, Bureau of Ships, U. S. Navy 1940-44; First Assistant Engineer aboard ships 1944-46. Assistant and Associate Professor of Mechanical Engineering, The George Washington University 1946-. Member, ASME, SAE, ASEE.

BRUCE DOUGLAS GREENSHIELDSProfessor of Civil Engineering*

B.S. in C.E. 1920, C.E. 1927, Oklahoma University; M.S. 1932, Ph.D. 1934, University of Michigan. Detroit Edison Fellow 1932-33. University of Michigan, City Engineer, Granville, Ohio 1926-27. Research Engineer, Ohio State Highway Department 1934-36. Associate Professor, College of the City of New York 1937-40. Associate Professor, Polytechnic Institute of Brooklyn 1940-46. Associate Professor and Professor of Civil Engineering, The George Washington University 1946-. Professional Engineer, Ohio, New York, District of Columbia. Member, ASCE, Inst. Traf. Engrs., AAUP, ASEE, ARBA, Sigma Tau, Sigma Xi.

DONALD JOSEPH HANRAHAN*Assistant Professor of Electrical Engineering*

B.E.E. 1950, The George Washington University; Graduate Training Course, Allis-Chalmers Manufacturing Company. Test Engineer, Engineer Research and Development Laboratories 1950-53. Assistant Professor of Electrical Engineering, The George Washington University 1953-. Associate AIEE, Member ASME.

FOREST KLAIRE HARRIS*Professorial Lecturer in Electrical Engineering*

A.B. 1921, Oklahoma University; M.S. 1923, Ph.D. 1931, Johns Hopkins University. Junior Physicist to Physicist, National Bureau of Standards, 1925-. Professorial Lecturer in Electrical Engineering, The George Washington University 1931-.

VINCENT HARRY HENNESSY*Lecturer in Civil Engineering*

B.C.E. 1948, The George Washington University. Designer, Corbett, Tingble and Company 1948-49. Civil Engineer, Corvey Engineering Company 1950-52. Civil Engineer, Airways Engineering Corporation 1953-. Associate in Civil Engineering, The George Washington University 1949-. Member, ASCE, Sigma Tau.

* On leave of absence fall term 1954-55.

*AVERETT HOWARD

Associate Professor of English Composition

A.B. 1922, University of California; A.M. 1940, Cornell University. Instructor, Oregon State Agricultural College 1922-24; Instructor, West Virginia University 1925-27; Assistant to Associate Professor of English Composition, The George Washington University 1940-. Member, Modern Language Association, Am. Soc. Aesth., Soc. Adv. Scand. Study.

JOHN KAYE

Associate Professor of Mechanical Engineering

B.S. in M.E. 1939, M.S. in M.E. 1948, California Institute of Technology. Aeronautical Engineer, War Production Board 1941-43; Mechanical Engineer, Pan American Airways 1943-45; Mechanical Engineer, Hydrodynamics Laboratory, California Institute of Technology 1945-50; Assistant Professor and Associate Professor of Mechanical Engineering, The George Washington University 1950-. Member, ASME, ASEE, Sigma Xi.

†WOLFRAM KARL LEGNER

Associate Professor of German

A.B. 1923, Harvard University; A.M. 1932, Ph.D. 1936, University of Pennsylvania. Instructor to Associate Professor of German, The George Washington University 1938-.

KERMIT MILTON LOVEWELL

Lecturer in Electrical Engineering

B.S. in E.E. 1926, University of Wisconsin. Junior to Senior Engineer, Potomac Electric Power Company 1934-. Lecturer in Electrical Engineering, The George Washington University 1944-45, 1951-. Professional Engineer, District of Columbia. Member, AIEE.

MARTIN ALEXANDER MASON

Professor of Civil Engineering

B.S. in Eng. 1921, The George Washington University; Ing.-Dr. 1938, University of Grenoble. John R. Freeman Scholar 1938. Junior Engineer to Engineer, National Bureau of Standards 1924-40; Chief Engineer, Beach Erosion Board, Corps of Engineers 1940-51; Lecturer in Mechanical Engineering 1941-44; Professor of Civil Engineering 1951-. Dean of the School of Engineering 1951-. The George Washington University. Professional Engineer, District of Columbia. Member, ASME, ASCE, AGU, ASEE, Washington Society of Engineers, Washington Academy of Sciences, Sigma Tau, Sigma Xi.

HAAREN ALBERT MIKLOFSKY

Associate Professor of Civil Engineering

B.C.E. 1946, The George Washington University; M. Eng. 1947, D. Eng. 1950, Yale University. Assistant Professor and Associate Professor of Civil Engineering, The George Washington University 1947-. Member, ASCE, Connecticut Society of Civil Engineers, ASEE, Sigma Tau, Sigma Xi.

ALVIN HANSON MORGAN

Lecturer in Electrical Engineering

B.S. in E.E. 1937, Kansas State College of Agriculture and Applied Science; M.S. 1953, Georgetown University. Radio Engineer, U.S. Air Corps Schools 1944-45; Electronic Engineer, National Bureau of Standards 1946-. Lecturer in Electrical Engineering, The George Washington University 1953-. Member, IRE.

§CHARLES RUDOLPH NAESER

Professor of Chemistry

B.S. 1931, University of Wisconsin; M.S. 1933, Ph.D. 1935, University of Illinois. Chemical Warfare Service 1942-45; Technical Adviser, H.Q. European Command 1950. Instructor to Professor 1935-47; Professor of Chemistry 1947-. The George Washington University. Member, ACS, AAAS, AAUP, Sigma Xi.

HAROLD VALDEMAR OERTING

Lecturer in Electrical Engineering

B.S. in E.E. 1925, Georgia School of Technology. Supervisor of Lighting, Potomac Electric Power Company 1930-. Lecturer in Electrical Engineering, The George Washington University 1950-. Member, Illuminating Engineering Society.

* On sabbatical leave fall term 1954-55.
 ‡ On sabbatical leave spring term 1954-55.
 § Professorial Lecturer while on leave as Professor 1954-55.

GEORGE PIDA*Lecturer in Electrical Engineering*

B.E.E. 1947, The George Washington University. Head, Test Section 1945-49. Physicist 1949-. Naval Research Laboratory. Associate and Lecturer in Electrical Engineering, The George Washington University 1947-. Member AIEE.

DEMETRIOS AREMISTOS POLYCHROME*Lecturer in Civil Engineering*

A.B. 1944, Pomona College. M.S. 1947, Sc.D. 1949, Massachusetts Institute of Technology. Senior Designer, Pileload Co., Inc., 1952-. Assistant Professor of Civil Engineering, Massachusetts Institute of Technology 1949-51. Lecturer in Civil Engineering, The George Washington University 1954-. Professional Engineer, New York. Member, ASCE, BSCE, ACI, Sigma Xi.

MERLE IRVING PROTZMAN*Professor of Romance Languages*

A.B. 1918, A.M. 1919, Dickinson College. Ph.D. 1940, Johns Hopkins University. Instructor to Professor 1920-41. Professor of Romance Languages 1941-. The George Washington University. Member, AAUP.

DWIGHT EDWARD SHYTLÉ*Lecturer in Electrical Engineering*

Executive Vice President and Chief Engineer, Combustion Corporation 1934-. Lieutenant, U. S. Navy 1941-46. Instructor to Lecturer in Electrical Engineering, The George Washington University 1943-. Member, ASH&VE.

BENJAMIN FRANKLIN SLINGLUFF*Lecturer in Electrical Engineering*

B.S. in E.E. 1917, Diesel Institute of Technology. Senior Engineer, System Planning Division, Potomac Electric Power Company. Lecturer in Electrical Engineering, The George Washington University 1949-. Professional Engineer, District of Columbia. Member, AIEE.

WALDO EDWARD SMITH*Professorial Lecturer in Civil Engineering*

B.E. in C. E. 1923, M.S. in C.E. 1924, The State University of Iowa. Hydraulic Engineer, Muskingum Water Conservancy District 1915-19. Executive Secretary, American Geophysical Union 1944-. Associate Professor, Robert College 1928-31. Assistant Professor, Dakota State College 1931-35. Professorial Lecturer in Civil Engineering, The George Washington University 1946-. Member, AGU, ASCE, Tau Beta Pi, Sigma Xi.

VICTOR SZEBEHELY*Professorial Lecturer in Mechanical Engineering*

Dr. Eng. 1945, University of Budapest. Specialist, David Taylor Model Basin 1921-27. Associate Professor of Mechanical Engineering, Virginia Polytechnic Institute 1948-51. Professorial Lecturer in Mechanical Engineering, The George Washington University 1954-. Member ASEE, Inst. Aero. Sci., Soc. Nav. Arch. and Marine Engrs., Va. Acad. Sci., Sigma Xi.

JAMES HENRY TAYLORProfessor of Mathematics*

B.S. 1916, University of Nebraska; A.M. 1920, Princeton University; Ph.D. 1924, University of Chicago. Instructor, University of Nebraska 1920-23. National Research Fellow, Princeton University, 1924-25. Professor, University of Wisconsin 1926-29. Professor of Mathematics, The George Washington University 1929-. Member, A. Math. Soc., M. A. S. A., AAUP, AAAS, Washington Academy of Sciences, Philosophical Society of Washington, Sigma Xi.

ROBERT GAY TRUMBULL*Associate Professor of Mechanical Engineering*

B.S. in C.E. 1911, Worcester Polytechnic Institute. Chief Estimator, Osgood Bradley Car Company 1919-27. Structural Designer, New England Electric System 1928-31. Chief Draftsman, Corps of Engineers 1936-41. Associate Professor of Mechanical Engineering, The George Washington University 1943-. Professional Engineer, District of Columbia. Member, ASME, ASEE.

* On sabbatical leave spring term 1954-55.

CARL HUGO WALTHER

Professor of Civil Engineering

B.E. 1931, M.C.E. 1933, Johns Hopkins University. Structural Designer, Bethlehem Steel Company 1939. Structural Consultant, Quartermaster General 1944-46. Alternate Member, National Inventors Council 1949-. Instructor to Professor 1939-47, Professor of C. I. Engineering 1947-. Assistant Dean of The School of Engineering 1945-51. The George Washington University. Professional Engineer, Maryland, District of Columbia. Member, ASCE, ASEE.

FRANK MARK WEIDA

Professor of Statistics

B.S. 1911, Kenyon College; Ph.D. 1923, State University of Iowa. Instructor, University of Iowa, 1917-24; Assistant Professor, Lehigh University 1925-30; Associate Professor to Professor 1930-35, Professor of Statistics 1935-. The George Washington University. Member, AA, Math. Soc., Math. Ass'n., Inst. Math. Stat., Stat. Ass'n., Philosophical Society of Washington, Washington Academy of Sciences.

RICHARD HENRY WELLES

Lecturer in Civil Engineering

B.C.E. 1953, The George Washington University. Civil Engineer, Bureau of Yards and Docks, Department of the Navy 1951-. Lecturer in Civil Engineering, The George Washington University 1953-.

THE ADVISORY COUNCIL

ALLEN VARLEY ASTIN, Ph.D.

Director of the National Bureau of Standards

RALPH DECKER BENNETT, Ph.D., Sc.D.

Technical Director of the Naval Ordnance Laboratory

LYMAN JAMES BRIGGS, Ph.D., Sc.D., LL.D.

Trustee of the University

HUGH LATIMER DRYDEN, Ph.D., Sc.D., D. Eng.

Director of Research of the National Advisory Committee for Aeronautics

RALPH LEON GOETZENBERGER, B.S., E.E.

Vice-President of the Minneapolis-Honeywell Regulator Company

CHARLES HOOK TOMPKINS, D. Eng.

President of the Charles H. Tompkins Company, Trustee of the University

DANIEL CHARLES WALSER, B.S.

Consulting Engineer; Chairman of the District of Columbia Board of Registration for Professional Engineers

The Council is made up of friends of the University who are intimately familiar with the educational needs of the professional community served by the School. The Council is advisory to the Dean of the School of Engineering; it serves the function of relating the School to the educational requirements of the engineering and scientific constituency served by the School.

GRADUATE ASSISTANTS 1953-54

Percy Harry Andros, B.S. 1938, University of Utah

Harold Ficken Stegman, C.E. 1931, Rensselaer Polytechnic Institute

Albert Richard Stirni, B.S. in C.E. 1934, Georgia Institute of Technology

Michael Brandies Rapport, B.E.E. 1953. The George Washington University

STUDENT ASSISTANTS 1953-54

Field Assistants (Surveying).—George Gautney, Jr.; Douglas Lorenzo Hatch, Jr.; James Katrivanos; Edward Shane Keen; James Franklin Saunders, Jr.

Civil Engineering.—Walter Aden Cornell, Patsy Collins Hazlett, Charles Oakey Higginson, Paul Kuzio, William Aubert Weidemeyer

Electrical Engineering.—Donald Leighteon Fetterman, Robert Hayes Montgomery, James Curtis Neely, Robert Hilton Pickard

Mechanical Engineering.—Harry Brandler, Christopher Kingsley Brown, Casper Mohl, Henry Paris, Jr.

ADMINISTRATIVE STAFF

Anne Brill Chason, *Secretary to the Dean*

Robert Howard Van Sickler, *Clerk-Typist*

COMMITTEES*

THE DEAN'S COUNCIL‡

1955

James Henry Taylor

Frank Mark Weida

1956

Carl Hugo Walther

Charles Edward Greeley

1957

Norman Bruce Ames

Bruce Douglas Greenshields

COMMITTEE ON ADMISSIONS AND ADVANCED STANDING

Norman Bruce Ames, *Chairman*

Benjamin Carpenter Cruickshanks

Haaren Albert Miklofsky

COMMITTEE ON SCHOLARSHIP

The Dean of the School, *Chairman*

Thomas Benjamin Brown

Benjamin Carpenter Cruickshanks

Haaren Albert Miklofsky

James Henry Taylor
Carl Hugo Walther
John Kaye

* The President of the University and the Dean of the School of Engineering are members ex officio of all committees.

‡ Elected by the Faculty.

COMMITTEE ON GRADUATE STUDIES

The Dean of the School, *Chairman*

Thomas Benjamin Brown
James Henry Taylor
Forest Klaire Harris
John Kaye

Norman Bruce Ames
Carl Hugo Walther
Haaren Albert Miklofsky
Victor Szebehely

GENERAL INFORMATION

INTRODUCTORY

The School of Engineering was organized October 1, 1884 as the Corcoran Scientific School of Columbian College and was situated in the University Building then at 15th and H Streets, NW. The school was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The School was among the first to accept women for degree candidacy in engineering.

In 1902 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate in character and the student was required to hold a Bachelor of Science degree as a prerequisite to entrance. An indication of the developing character of the School is found in the entrance requirements which stated that "The candidate must give evidence he has completed a liberal undergraduate course—which was of such character as to fit him to pursue to advantage the study of advanced engineering subjects".

Administrative changes led to The Washington College of Engineering being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the school was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was dropped from the curriculum and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than

technology which had characterized the School since 1902 was continued and has remained to this day as one of the important distinguishing features of the School.

It has become traditional in the School of Engineering to maintain an intimate relationship between the students and the modern practices of engineering by including among the staff of instruction practicing engineers familiar with the latest problems and procedures of engineering science. The instructors participating in this plan bring to the student a direct contact with the practice of engineering and help to insure an effective balance of instruction between the principles of engineering and application of the principles to the many new problems confronting engineers today.

The courses of instruction are open to both men and women, continuing the practice first initiated in 1884.

OBJECTIVE

The objective of the School of Engineering is to produce graduates who possess knowledge and understanding of the fundamental scientific principles in their fields of study; some skill in their application; and an attitude of responsibility toward society and the engineering profession.

PROGRAMS OF STUDY

Programs of undergraduate study are offered leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering (with optional areas of concentration).

Graduate work is offered under the supervision of the Committee on Graduate Studies, leading to the degrees of Master of Science in Engineering, and Master of Engineering Administration.

HOURS OF INSTRUCTION

Courses of instruction are scheduled in the morning, afternoon, and evening. Evening classes are identical with daytime sections of corresponding courses, may be taught by the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular course and obtain a degree.

VETERANS EDUCATION

The Office of Veterans Education of The George Washington University operates as a service bureau for veterans interested in studying

at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained concerning the educational program of the University and the procedure for securing the educational benefits for veterans of World War II (Public Law 346) or "Korean" veterans (Public Law 550).

PUBLIC LAW 346

At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to the Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, for a Certificate of Eligibility and Entitlement for presentation to the Office of Veterans Education at the time of registration. Veterans who have attended another institution under the GI Bill must obtain a Supplemental Certificate of Eligibility to present to this University.

PUBLIC LAW 550

At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to the Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, for a Certificate of Education and Training, for presentation to the Office of Veterans Education at the time of registration. A photostatic copy of separation papers must accompany the original application for certification.

VOCATIONAL REHABILITATION

Disabled veterans desiring vocational rehabilitation under either GI Bill should apply to the Veterans Administration, Veterans Benefits Office, Munitions Building, Twentieth Street at Constitution Avenue, for approval of their training objectives at least sixty days prior to registration.

ADMISSION

Credit for work done in the service schools is granted provided the veteran has not been out of the service for three years or more. To be considered for such credit veterans should submit to the Director of Admissions photostatic copies of their records indicating courses successfully completed with sufficient identification of the course to enable the Admissions Office to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

AIR FORCE RESERVE OFFICERS' TRAINING CORPS

The Air Force Reserve Officers' Training Corps (Air Force ROTC) unit was established at the University in 1951 under authority of Section 40-47C, National Defense Act of June 3, 1916, as amended. Air Force personnel, approved by the President of the University, are detailed by the Department of the Air Force to supervise and instruct the Air Force ROTC cadets.

The mission of the Air Force ROTC program is to select and prepare students through a permanent program of instruction to serve as commissioned officers in the Regular and Reserve components of the United States Air Force. Classroom instruction and leadership training is provided to develop in the student the knowledge and the attributes of character, personality, and leadership required of officers in the United States Air Force. Emphasis is placed on arousing in the student a desire to serve his country as a flying officer.

Membership in the Unit, which is voluntary, is open to any regularly enrolled full-time, male student who is a citizen of the United States, between the ages of 14 and 25, physically qualified, of good character, and a candidate for a Bachelor's degree. Students who successfully complete the basic course or have equivalent active military training may be selected to enter the advanced course. Students in the advanced course receive from the Government a subsistence allowance of approximately \$500, which is exempt from income tax. During the period of the summer camp, the advanced student receives, in addition, \$75 a month, food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses.

A student enrolling in the basic course must agree to complete the two year course as a prerequisite for graduation from the University. A student, if selected for enrollment in the advanced course, must sign a contract to complete the course as a prerequisite to graduation; attend a four- to six-week summer camp; to accept a Reserve commission for an indefinite term, if and when tendered; and to serve a period of two years on active duty, if called by the Secretary of the Air Force.

MILITARY SERVICE DELAY

Deferment from induction under the Selective Service Act of 1964 may be granted to selected students within authorized quotas. Normally, a student is not considered for draft deferment until he has completed one term's work in the University, with a quality-point index of at least 2.00. A student's deferment is subject to withdrawal if his quality-point index falls below 2.00. Students who are deferred and whose deferments are subsequently cancelled because they failed to fulfill the conditions under which deferments were originally granted can not again be deterred without the approval of the Chief of Staff, USAF.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each term; (5) the above regulations apply also during the summer term of the University.

The University is not responsible for injuries received in inter-collegiate or intra-mural games, or in any of the activities of the departments of physical education.

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at \$35 a month and double rooms at \$30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. A separate application for a room should be made well in advance (for the fall term by May first, for the spring term by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for twelve or more

credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for \$24 a month a person. Dining facilities are available to all residents. Meals are served at the Student Union. Application forms for room reservation may be obtained from the Director of Activities for Men, Building R, 2027 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

RELIGIOUS LIFE

The University recognizes the contribution that religion can make to the education of its students by encouraging them to participate in denominational clubs of their own choice. National Catholic, Jewish, and Protestant bodies sponsor these religious organizations, which act as links between the University and the local churches. The Director of the University Chapel and the advisers to the various denominational organizations are available throughout the year for consultation on personal problems.

UNIVERSITY CHAPEL

The University Chapel is maintained as a non-sectarian expression of the faith of the University in the contribution that religion can make to the education of its students. Twenty-minute services are held Wednesday of each week at 12:10 P.M. Representative clergymen of Washington are guest speakers at these non-denominational services.

PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available, and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

VOCATIONAL COUNSELING

The University Testing Center is at 2114 G Street NW. The Center offers educational and vocational testing and counseling service. This office maintains a file of occupational information and training opportunities.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the game room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

DAVIS-HODGKINS HOUSE

The Davis-Hodgkins House, 731 Twenty-second Street, NW., is the engineering student center, providing lounges, reading rooms, and student organization offices. The House provides convenient, comfortable facilities for the exchange of ideas and good fellowship among student engineers.

INTERNATIONAL HOUSE

The International House, 2116 G Street NW., is the social center for students from foreign countries. A series of teas, dances and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students Society welcomes as members students from other lands as well as North American students.

The Adviser to students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

DIRECTORS OF STUDENT ACTIVITIES

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as, student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

STUDENT GOVERNMENT

Student Council.—The Student Council is responsible to the Director of Activities for Men and the Director of Activities for Women for the conduct of all student activities. Members of the Council are elected annually.

Committee on Student Life.—The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following student members: President of Student Council, President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council, and an Editor of the *Hatchet*, appointed by the President of the University. This Committee has the power to review the acts of all student organizations, including the Student Council and set aside acts that are contrary to established policy and regulations of the University or the Committee.

Approval of Student Organizations.—This Committee is granted authority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

- 1 A member of the Dance Production groups, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Inter-fraternity Council, Engineers' Council, Student Life Committee, or any publications staff
- 2 An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers (Student Chapter).—Membership open to students who are candidates for a civil engineering degree or the degree of Bachelor of Science in Engineering.

American Institute of Electrical Engineers (Student Chapter).—Membership open to candidates for an electrical engineering degree.

American Society of Mechanical Engineers (Student Chapter).—Membership open to candidates for the degree of Bachelor of Mechanical Engineering.

Institute of Radio Engineers (Student Chapter).—Membership open to students in electrical engineering who are taking the communications option, or who are interested primarily in electronics.

Theta Tau (Gamma Beta Chapter).—A national professional (engineering) fraternity. Membership by invitation to outstanding students who have completed successfully at least the freshman year in the School of Engineering.

SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Kappa Alpha, Theta Delta Chi, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Alpha, Sigma Nu, Acacia, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Club, Christian Science Organization, Lutheran Student Association, Newman Club, Religious Council, Wesley Club, Westminster Foundation.

MUSICAL ORGANIZATIONS

Girls' Glee Club, Men's Glee Club.

STUDENT PUBLICATIONS

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mecheleci* (engineers' publication), *The Percolator* (pharmaceutical publication).

OTHER ACTIVITIES

Alpha Phi Omega—National Service Fraternity, Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Chess Club, Colonial Boosters, Flying Sponsors, Inter-fraternity Council, Inter-fraternity Pledge Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Intramural Council, Junior Panhellenic Association, Masonic Club, Sailing Association, Senior Panhellenic Association, Strong Hall Council, Student Council, The George Washington University Dramatic Activities, Women's Coordinating Board, Women's Recreation Association.

There is a complete program of intramural sports for both men and women.

THE ENGINEERS' COUNCIL

The Engineers' Council is the student governing body for the School of Engineering. It is composed of two representatives from each student organization in the School of Engineering, the Business Manager of the engineer student magazine, and the House Manager of the Davis-Hodgkins House. The purpose of the Council is to provide liaison between the student body of the School of Engineering and the Faculty, Administration, and Student Government of the University in all matters affecting the general interests and welfare of the student body, the School of Engineering, or the University. The Council is maintained financially by the Engineers' Council Fee paid by each student in the School of Engineering, and sponsors the engineer student magazine, *Mecheleci*; the Annual Engineers' Mixer, Engineers' Ball, Engineers' Banquet, and the Annual Christmas Tree Ceremony in the University Yard. Council meetings are open to all students in the School of Engineering.

The Council acts as the directing body for *Mecheleci*, the engineers

student magazine. The magazine is published six times a year and is sent free to all engineering students. It includes campus and alumni news, a calendar of events, news of the student organizations, and articles on engineering by students and faculty members. The magazine is published by a student Board of Editors and a volunteer student staff.

ADMISSION

The School of Engineering accepts men and women. Students may enter The School of Engineering at the beginning of the fall term, the spring term, or the summer term.

GENERAL ADMISSION REQUIREMENTS

The following factors are considered in determining the eligibility of an applicant for admission:

1. The adequacy of previous academic work as preparation for the course of study now contemplated—including quantity and quality of work and the standing of the institution in which it was done.
2. The aptitude of the student for the course contemplated.
3. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who for any other reason would not be a desirable student.

APPLICATION FOR ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of \$3. A recent photograph, with signature, of the applicant must be attached to the blank.

An applicant for admission to the Reserve Officers' Training Corps must also fill out and return a supplemental Air Force ROTC application form.

Applications should be filed not later than July 1 for the fall term, January 1 for the spring term, and May 1 for the summer term.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it directly to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning must request the registrar of that institution to mail directly to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the regis-

trar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned*, together with an honorable dismissal from the institution last attended.

The Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey, is accepted as supplemental evidence of the applicant's educational attainment, and the appropriate report should accompany the application for admission whenever available.

METHODS OF ADMISSION

FROM SECONDARY SCHOOLS

An applicant from a secondary school may seek to qualify for admission by certificate or examination.

BY CERTIFICATE

A certificate of graduation with a minimum of fifteen "units"* from an accredited secondary school and the recommendation from the principal of the secondary school that the applicant is prepared to undertake college work will be considered subject to the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class.
2. If the school is not listed by the regional accrediting association, but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class.

By College Entrance Board Examinations

An applicant may qualify by passing satisfactorily College Entrance Board examinations as prescribed by the Director of Admissions. These examinations are given at a large number of examination centers throughout the United States, including Washington, D. C., on August 11 and December 4, 1954; and January 8, March 12, May 21, and August 10, 1955.

Arrangements for the examinations should be made with the College Entrance Examination Board, Post Office Box 592, Princeton, New Jersey, not less than one month before the date of the examinations.

FROM HIGHER INSTITUTIONS†

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

† The University reserves the right to refuse advance credit in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

institution of higher learning. The student must be in good standing as to scholarship and conduct, and must be eligible to return to the previously attended institution in the term for which he seeks admission to this University.

If the transcript of record from such an institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record directly from the principal of the secondary school. High school work is considered only as fulfilling entrance requirements; it is never credited toward advanced standing.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree at this University, subject to the curriculum requirements and regulations of the school or college to which admission is sought. Work of low pass grade (such as *D* or the equivalent) will not be considered for transfer.

ENTRANCE REQUIREMENTS

Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.—An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

Master of Science in Engineering.—Applications for admission to candidacy for the degree must be made to the Committee on Graduate Study of the School of Engineering, through the Director of Admissions of the University.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline and must have acceptable personal qualities. Applicants holding Bachelor's degrees in engineering from

recognized institutions and whose record, in the opinion of the Committee, gives evidence of adequate preparation for graduate study may be admitted to candidacy for the graduate degree. Applicants who do not hold a satisfactory degree, or whose adequacy of preparation is questioned may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

Study of a graduate character completed prior to application for candidacy for the graduate degree will be considered by the Committee in determining the applicant's candidacy, provided it contributes substantially to the achievement of mastery of principles and methods.

Master of Engineering Administration.—Application for admission to candidacy must be made to the Committee on Graduate Studies, through the Director of Admissions of the University.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline, and must have acceptable personal qualities. To qualify for admission, applicants must hold a Bachelor's degree in engineering or science from a recognized institution; have had some supervisory or administrative experience; and give evidence of preparation adequate for graduate study in this field. Applicants who do not hold a satisfactory Bachelor's degree, or whose adequacy of preparation is questioned, may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

Study of a graduate character prior to application for admission to candidacy for the graduate degree will be considered by the Committee in determining the applicant's candidacy, provided it contributes substantially toward the objective of the discipline.

The Professional Degrees—Civil Engineer, Electrical Engineer, Mechanical Engineer.—Application may be made not sooner than three years after graduation from this University provided the candidate can demonstrate definite responsibility for engineering work of substantial importance. Application must be made to the Dean.

Unclassified Students

An applicant eligible for admission to candidacy for a graduate degree, except that he requires substantial remedial or preparatory work in a limited area, may, at the discretion of the Dean, be admitted as an unclassified student.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University.

A student who has previously matriculated in the University, but who

has not been in attendance during the term prior to registration, should file an application for readmission in advance of registration.

Registration is for the term unless otherwise indicated on the registration paper. No registration is accepted for less than a term or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the Dean. Allowance of credit for work done concurrently will be at the discretion of the Committee on Admission and Advanced Standing.

Registration in the University entitles each student to the following University privileges (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration, page 23. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

FEES AND FINANCIAL REGULATIONS

Application fee, charged each applicant for admission, non-refundable....	\$3.00
Tuition fee, for each credit hour* for which the student registers (except work toward a Master's degree in Engineering).....	15.00
For the degree of Master of Science in Engineering	
For work leading to and including the Comprehensive Examination..	550.00
For the degree of Master of Engineering Administration	
For work leading to and including the Comprehensive Examination..	500.00
Graduation fee	20.00
Fee for binding Master's thesis	5.00
Fee for the Professional thesis	75.00
An annual fee, one-half payable in advance at the time of each registration.	
Late-registration fee, charged each student who fails to register within the designated period	5.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00
Service fee, charged each student for late payment of tuition	1.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any term of absence from the University or after completion of tuition requirements	15.00
For special physical examination	2.00

* Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

Engineers' Council fee, charged each student in the School of Engineering for each term or any part thereof except the summer term.....	1.50
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry courses who fails to check out of the laboratory by the time set by the instructor	2.00
Transcript fee, charged for each transcript of record after the first.....	1.00
Additional Course Fees	

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the term and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each term are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for term charges, except for fees payable in advance, permitting payments as follows:

Fall Term.—One third at the time of registration; one third on November 3; one third on December 3.

Spring Term.—One third at the time of registration; one third on March 3; one third on April 3.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of \$1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of \$5.

A student suspended for failure to meet payments when due may not be reinstated for the term after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

A student may not withdraw from either the basic course (2 years) or the advanced course (2 years) of the Air Force ROTC without the approval of the President of the University.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Term.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Term.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of \$5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the term for which a registration charge is incurred and in no case will this payment be credited to another term.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of \$2. A student who drops a course before the end of the term must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks on separation from the Corps will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

SCHOLARSHIPS, PRIZES, FINANCIAL AID

SCHOLARSHIPS

Scholarships are awarded for two terms unless otherwise specified and are credited in equal parts for each term. Each holder must carry the full prescribed schedule during the period for which the scholarship is awarded. Except in the case of the School of Engineering and the Eugene and Agnes E. Meyer Scholarships, the applicants must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further

information may be obtained from the Chairman of the Committee on Scholarships.

School of Engineering Scholarships.—Four scholarships, established in 1952, are available each year in the School of Engineering to graduates of accredited secondary schools. Each scholarship provides full tuition for one year. The holders of these scholarships must carry a full program in the School of Engineering.

Emma K. Carr Scholarships.—Six scholarships in the amount of \$400 each and eight of \$100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship.—This scholarship, in the amount of \$400, established in 1896 by Mrs. Maria M. Carter in memory of her husband, Henry Harding Carter, is available to a deserving student who is preparing for the civil-engineering profession.

Maria M. Carter Scholarship.—This scholarship, in the amount of \$100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Isaac Davis Scholarship.—This scholarship, in the amount of \$80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

Hazelton Scholarship.—This scholarship, in the amount of \$300, established in 1950 by the bequest of Lillie S. Hazelton, is awarded annually "for the use and assistance of needy and worthy students".

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund, in the amount of \$2,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

David Spencer Scholarship.—This scholarship of \$150, established in 1918 by Miss Louisa J. Spencer, is available under certain restrictions.

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of \$300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

THE COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded by the Scholarship Committee of the Columbian Women. Applications for these scholarships should be addressed to the Chairman of the Scholarship Committee,

the Columbian Women, The George Washington University, Washington 6, D.C., not later than May 15 preceding the academic year for which the scholarship is to be awarded, or, in the case of award for the spring term, not later than January 1.

Nellie Maynard Knapp Scholarship Fund.—The income from this fund of \$5,000, established in 1915 in memory of a former president, Mrs. Martin A. Knapp, is available for scholarships for women.

Founders of Columbian Women Scholarship Fund.—The income from this fund of \$5,000, established in 1920, is available for scholarships.

Lillian Young Herron Scholarship Fund.—The income from this fund of \$5,000, established in 1925 and named in 1930 in memory of a former president, is available for scholarships.

College Women's Scholarship Fund.—The income from this fund of \$500, established in 1926 by the College Women's Club of Washington, D.C., is available for scholarship aid.

Grace Ross Chamberlin Scholarship Fund.—The income from this fund of \$2,300, established in 1932 in honor of a former president, is available for scholarship aid.

PRIZES

Alpha Chi Sigma Prizes.—Alpha Pi Chapter of Alpha Chi Sigma Fraternity offers annually the following prizes:

A "Handbook on Chemistry and Physics" is awarded to each of the three students who carry at least eighteen credit hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry will be inscribed on a bronze plaque. The winner must have had at least sixteen hours of chemistry including the final term at The George Washington University.

Alpha Delta Pi Prize.—Alpha Pi Chapter of Alpha Delta Pi Fraternity offers an annual prize of \$10 to the woman member of the junior class with the most outstanding record in scholarship, extra-curricular activities, and service to the University.

American Institute of Chemists Prize.—The District of Columbia Chapter of the American Institute of Chemists offers an annual prize of a medal and junior membership in the American Institute of Chemists to that graduating student, majoring in chemistry, who excels in scholarship and in the personal qualities of integrity and leadership.

Byrne Thurtell Burns Memorial Prize.—This prize of \$75 is awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Willie E. Fitch Prize.—The Willie E. Fitch Prize of \$75, established in 1883 by James E. Fitch, in memory of his son, is awarded annually to a senior student for the best examination in chemistry.

Martin Mahler Prize in Materials Testing.—This prize established in 1953 by Martin Mahler consists of a one-year membership in the American Society for Testing Materials and is awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Mortar Board Prize.—This prize, consisting of a silver cup, is awarded annually to the woman student in the sophomore class having a scholarship average of B or higher and the most outstanding record in activities.

Omicron Delta Kappa Prize.—Alpha Delta Circle of Omicron Delta Kappa Fraternity offers annually a plaque to be awarded to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities".

Phi Eta Sigma Prize.—The George Washington University Chapter of Phi Eta Sigma offers annually to the male student attaining the highest scholastic average in his first full term of work, a choice book selected from the field of the recipient's major interest. The winner's name will be engraved on a plaque in the Office of the Dean of the Junior College.

Phi Sigma Kappa Prize.—Phi Sigma Kappa Fraternity offers annually a silver cup to the winner of an oratorical contest, open to all freshmen.

Pi Beta Phi Prize.—A prize of \$20 is awarded annually by the District of Columbia Alpha Chapter of Pi Beta Phi Fraternity to that woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Ruggles Prize.—The Ruggles Prize of \$35, established by Professor William Ruggles in 1859, is awarded annually to a candidate for a baccalaureate degree for excellence in mathematics.

Sigma Kappa Prize.—Zeta Chapter of Sigma Kappa Sorority offers an annual prize of \$10 to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—Xi Chapter of Sigma Tau Fraternity offers annually a medal to be awarded to that member of the freshman class in the School of Engineering who maintains the highest scholastic standing in the work of the entire year.

James MacBride Sterrett, Jr., Prize.—This prize, established in 1911 by Professor James MacBride Sterrett in memory of his son, consists of books awarded annually to that student who obtains the highest average in Physics 6, 7, and 8.

Theta Tau Activities Plaque.—Gamma Beta Chapter of Theta Tau Fraternity offers annually a plaque to be awarded to that member of the senior class who has the most outstanding record in activities in the School of Engineering during the entire period of his attendance.

Alexander Wilbourne Weddell Prize.—This prize of \$350, established in 1923 by Mrs. Virginia Chase Weddell, is awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world". The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

MILITARY AWARDS

Air Force Association Silver ROTC Medal.—This medal, offered by the Air Force Association, is awarded annually to the Air Force ROTC Cadet of the senior class who, after completion of summer camp, is judged to be the outstanding cadet among those physically qualified for flying training who have indicated their intention to apply for such training upon graduation.

Reserve Officers' Association Gold ROTC Medal.—This gold medal, offered by the Reserve Officers' Association of the District of Columbia, is awarded annually to the Air Force ROTC Cadet of the junior class with the highest grades in the leadership and academic phases of the Air Force ROTC course for the current year.

Reserve Officers' Association Silver ROTC Medal.—This silver medal, offered by the Reserve Officers' Association of the District of Columbia, is awarded annually to the Air Force ROTC Cadet of the sophomore class with the highest grades in the leadership and academic phases of the Air Force ROTC course for the current year.

Reserve Officers' Association Bronze ROTC Medal.—This bronze medal, offered by the Reserve Officers' Association of the District of Columbia, is awarded annually to the Air Force ROTC Cadet of the freshman class with the highest grades in the leadership and academic phases of the Air Force ROTC course for the current year.

Reserve Officers' Association Junior Memberships.—Five junior memberships, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to the five Air Force ROTC Cadets of the junior class who obtain the highest grades for the first term in the academic phase of the Air Force ROTC course, Air Science III (101).

Pershing Rifles Achievement Medals.—These medals offered in gold, silver, and bronze are awarded periodically by the National Headquarters of the Pershing Rifles to those active Pershing Riflemen in the Ad-

vanced Air Force ROTC course who are judged by their cadet officers, faculty administration, and the Professor of Air Science to be outstanding examples of the ideals of the Pershing Rifles.

The Armed Forces Chemical Association Annual Award.—This award consisting of a scroll and a medal is offered by the Armed Forces Chemical Association annually to selected Air Force ROTC cadets majoring in chemistry or chemical engineering in their junior year. Nominations are made by the Director of Air Science and final selection is made by a board of three senior Air Force Officers.

Society of American Military Engineers Gold Medal.—This medal with Key Replica, offered by the Society of American Engineers, is awarded annually to selected Air Force ROTC cadets in the next-to-last year of their engineering course and in the last year of such course. Nominations are made jointly by the Director of Air Science and the Dean of the School of Engineering, and final selection is made by a board of three senior Air Force officers.

Convair Trophy.—This trophy, a replica of one of the nation's most modern aircraft, offered by Consolidated Vultee Aircraft Corporation, is awarded annually to the Air Force ROTC Cadet attaining the highest cumulative grade in Air Science III and IV among the cadets applying for flying training.

FINANCIAL AID

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund of \$10,000.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

For information concerning full- and part-time employment, see "Placement Office", page 24.

REGULATIONS

A student enrolled in the School of Engineering is required to conform to the University regulations and to comply with the rules and regulations of the School of Engineering.

A student who withdraws or is suspended, or is otherwise absent from the University for one term or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

AMOUNT OF WORK

Eighteen credit hours, including required physical education, constitute normal full-time work. Nine credit hours constitute normal part-time work.

A full-time student who is not on probation may take ordinarily not more than nineteen credit hours. A student employed more than twenty-four hours a week, who is not on probation, may take ordinarily not more than ten credit hours. A student whose quality-point index is 3.00 or higher may be permitted by the Dean to exceed these limits by not more than two credit hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a term is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ADVISORY SYSTEM

Every student entering the School of Engineering as a degree candidate is assigned a permanent Faculty adviser—for the purpose of guiding the educational career of the student, providing assistance in his professional development as an engineer, establishing close relations between the Faculty and the student, and furnishing counsel and advice in all phases of the academic career of the student.

Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, extra-curricular activity as part of the educational process; and assist the entering student in orientation in the engineering discipline. The adviser represents the student in all cases requiring Faculty action.

Students are required to obtain their advisers' approval of programs of study prior to registration.

A student who has not completed the course work specified for the freshman and sophomore years is required to consult his adviser when so directed by the Dean, and to follow the recommendations of his adviser in all academic matters. However, advisers may not deny a student entry into any course or activity to which he is entitled under the regulations of the School of Engineering. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, in respect to any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, in accordance with professional concepts, the final responsibility for a student's action lies wholly with the student.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the School of Engineering may be dismissed from the University.

GRADES

Grades are not given out by instructors but are mailed to the student through the office of the Registrar at the close of each term. Upon request, a copy of the student's grades will be forwarded to his parent or guardian.

The following grading system is used: excellent, *A*; good, *B*; average, *C*; passing, *D*; failing, *F*. Whenever a grade has not been assigned, the symbol *Inc.* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *Inc.* is a sign temporarily to indicate that all the required work of the course has not been completed and a satisfactory explanation has been given to the instructor. An "incomplete" can not be made up after the lapse of one calendar year except by permission of the Faculty. Courses from which a student has withdrawn by proper authorization will be indicated by the symbol *W*. No student may repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

For graduate work, grades are indicated as "excellent", "satisfactory", "unsatisfactory", or "incomplete".

QUALITY-POINT INDEX

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each credit hour for which the student has registered.

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of credit hours for which the student has registered, both based on the complete collegiate record. Courses marked *W* or *Inc.*, are not considered in determining the index, except that courses marked *Inc.* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. If an "incomplete" is not superseded by a proper grade within the allotted time, it is computed as zero quality points. Grades in courses taken at another institution are not considered in computing the quality-point index. Grades in courses taken to satisfy entrance requirements and in physical education courses are not considered in computing the quality-point index.

SCHOLARSHIP

In order to graduate, a student must have a general quality-point index of at least 2.00 and, in addition, a quality-point index of at least 2.00 in all work accepted for the degree in the School of Engineering.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Probation is imposed for the amount of time required to complete a minimum of twelve additional credit hours or for one term, whichever is greater. In certain circumstances the period of probation may be extended. A student on probation may not hold office or participate in the

activities of any student organization or represent the School in any undergraduate competition.

Suspension.—A student who has a quality-point index below 1.00 will be suspended. A student who becomes subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship regulations are applied when a student has completed a minimum of twelve credit hours of work. Thereafter, the regulations are applied in multiples of twelve credit hours.

CHANGES IN PROGRAM OF STUDIES

A student may not change or drop courses or change his status to that of auditor except with the approval of the Dean of the School upon presentation of adequate reasons for such changes.

Change from one section to another of the same course or from one major subject to another within the School may be made with the approval of the Dean. All requirements specified in the course of study to which the change is made must be satisfied before graduation.

Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Applications for such change should be made on the proper form, obtainable in the Office of the Director of Admissions, where it should be filed.

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who has not a clear financial record.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

During the seven days following the first day of classes of a term, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

During the thirty-five days following the first day of class in the course, courses may be dropped from a student's program, with the approval of the student's adviser and the Dean, and without academic penalty. Withdrawal from a course without the approval of the student's adviser entails a penalty of failure in the course.

Withdrawal from a course, without academic penalty, may be authorized by the Dean at any time upon presentation of written evidence of extenuating circumstances.

Unauthorized withdrawal from a course at any time entails a penalty of failure in the course and financial responsibility for the full fee for the course.

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the School.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be forwarded on request to other institutions. Unofficial copies of records will be issued to the student on request. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Freshmen and sophomores in the School of Engineering are required to take Physical Education 1-2* and 11-12* unless they are registered for less than 9 credit hours or unless regular employment during the day makes it necessary to take all classes during the evening hours. Veterans are not subject to these requirements.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the Dean of the School.

A student entering the University with advanced standing is not exempt

* Freshmen in the School of Engineering enrolled in the Air Force ROTC substitute Air Science 1-2 for Physical Education 1-2, sophomores substitute Air Science 51-52 for Physical Education 11-12.

from the physical education requirements unless he has satisfactorily met the requirements elsewhere. Courses in military training are not accepted in satisfaction of these requirements.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

USE OF CORRECT ENGLISH

Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean's Council. The Council may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean's Council.

The foregoing regulation is to be interpreted as applying to both written and spoken English.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirement of the School, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last term of the senior or final year.

Curriculum.—Curriculum requirements for the Bachelor's degrees are stated on pages 49-55; for the Master's degrees on pages 56-57, 58.

Residence.—For the Bachelor's degrees, a minimum of one year or thirty-six credit hours must be completed in residence. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis or Comprehensive Problem.—A thesis or comprehensive problem submitted in partial satisfaction of requirements for the Master's degree or a professional degree in engineering must be presented in its final form to the Dean not later than the date specified in the University calendar. Three copies of each thesis or comprehensive problem are

required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the styling of all theses should be obtained from the Dean.

Accepted theses and comprehensive problems with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in the thesis or comprehensive problem must be secured from the Dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

HONORS

With distinction.—The degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution except that taken during the term immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty members representing the major department or field not later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution except that taken during the term immediately preceding the granting of the degree.
4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree prior to the beginning of the term immediately preceding the granting of the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Student" if he (1) has completed Air Science III with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic standing among the upper third of all students in the institution pursuing the same academic major and scheduled to graduate the same school year, or an accumulative academic average of B or better; (3) possesses high moral

character and definite aptitude for service in the Air Force; (+) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at Air Force ROTC summer camp. Distinguished Air Force ROTC students are authorized to wear a "Distinguished" badge centered above the right breast pocket of the uniform.

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a Distinguished AFROTC Student and maintained the standards required of a Distinguished AFROTC Student during the period between designation and graduation; (2) completed the advanced Air Force ROTC course; (3) completed the requirements for a Bachelor's degree. Distinguished Graduates will be presented with a certificate signed by the Commandant, Air Force ROTC, and they will be given special consideration when they enter active military service and become eligible to apply for a Regular Air Force Commission.

THE LIBRARY

A student registered in the University is entitled to the reference ^{un} of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

Library books, with the exception of those in the Law and Medical collections, may be drawn for home use for a period of two weeks. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books and periodicals for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

HOURS

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

THE BACHELOR'S DEGREES

The Bachelor's degrees are: Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering.

The degree of Bachelor of Science in Engineering may be earned with any of the following options: Business Administration, Chemistry, Economics, Machine Computer, Mathematics, Physics, or Statistics.

Curricula leading to the degrees of Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, and Bachelor of Electrical Engineering are accredited by the Engineers' Council for Professional Development, the recognized accrediting body of the engineering profession.

CURRICULUM REQUIREMENTS

The satisfactory completion of one of the following curricula of 140 credit hours, exclusive of physical education, is required.

Physical Education is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", pages 45-46.)

Variations from the prescribed curricula may be made, with the permission of the Dean's Council. A student desiring to omit a required course and substitute another must make written application to the Dean presenting satisfactory reasons for the substitution; and written approval must be obtained before registration for the course.

A student who is absent from the University for one term or more (except on national service leave) is required to satisfy the curriculum requirements existing at the time of his return.

FRESHMAN YEAR (FOR ALL ENGINEERING CURRICULA)

	Credit Hours
Chem. 11-12	
CE 2	
*Engl. 1, 2	
General Chemistry	8
Plane Surveying	2
English Composition	6

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the Freshman English course; those who are inadequately prepared for English 1 will be assigned to English A, for which credit will be given unless it is used to satisfy entrance requirements.

Math. 12	Analytic Geometry	3
Math. 19	Differential Calculus	3
ME 1	Engineering Survey and Orientation	1
ME 3	Mechanical Drawing	2
ME 4	Descriptive Geometry	2
Phys. Ed.	See pages 45-46 for statement of requirement.	6
*Phys. 6 and 7	General Physics	6
Total.....		33

ROTC.—Air Force ROTC students substitute Air Science 1-2 (4) for Mechanical Engineering 1 (1) and Physical Education 1-2 (2).

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)		Credit Hours
Phys. 8	General Physics	1
Phys. 55	Physical Measurements	1
Math. 20	Integral Calculus	3
Math. 103	Calculus and Differential Equations	6
EE 9-10	Elements of Electrical Engineering	2
CE 21	Analytical Mechanics: Statics	3
CE 22	Analytical Mechanics: Dynamics	3
Speech 1	Effective Speaking	3
Engl. 11	The Writing of Reports	4
ME 13-14	Mechanism	4
CE 25-26	Engineering Materials	4
Phys. Ed	See pages 45-46 for statement of requirement.	
Total		37

ROTC.—Air Force ROTC students substitute Air Science 51-52 (4) for Physical Education 11-12 (2) and Speech 1 (3).

Bachelor of Civil Engineering

JUNIOR YEAR

Bachelor of Civil Engineering		Credit Hours
JUNIOR YEAR		
CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2
ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1-2	Principles of Economics	3
CE 141	Graphic Statics	3
CE 142	Bridge Stresses	5
Elective	.....	3
Total		34

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Elective (5).

* The student who begins Physics with Physics 6 or 7, is subject to a qualifying examination. Credit will be given for Physics 5 if not used for entrance requirements.

SENIOR YEAR		Credit Hours
CE 23	Higher Surveying	4
CE 164	Highway Engineering	3
CE 147-48	Structural Design	4
CE 149-50	Concrete and Masonry Construction	6
CE 151-52	Statically Indeterminate Structures	4
CE 181-82	Water Supply and Sewerage	6
CE 187-88	Engineering Contracts and Specifications	4
CE 189-90	Proseminar in Civil Engineering	2
CE 192	Soil Mechanics	3
Total		36

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Civil Engineering 187-88 (4) and Civil Engineering 189-90 (2).

Bachelor of Electrical Engineering

JUNIOR YEAR		Credit Hours
CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2
ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1-2	Principles of Economics	6
EE 105-6	Direct-Current Laboratory	4
EE 107	Alternating-Current Circuits	3
EE 108	Alternating-Current Machinery	3
Elective	.....	3
Total		36

ROTC.—Air Force ROTC students substitute Air Science 131-2 (6) for Economics 2 (3) and Elective (3).

SENIOR YEAR		Credit Hours
1. Communications Option		
EE 115-16	Advanced Network Theory	6
EE 123-24	Advanced Network Laboratory	4
Phys. 133	Electronic Circuits	3
EE 148	Applications of Electronic Devices	3
EE 111-12	Electrical Measurements	4
EE 109	Alternating-Current Machinery	3
EE 150	Electronic Devices Laboratory	2
EE 133-14	Alternating-Current Laboratory	4
EE 189-90	Proseminar in Electrical Engineering	2
Elective	.....	3
Total		34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Electrical Engineering 189-90 (2) and Elective (3).

		Credit Hours
2. Power Option		
EE 109	Alternating-Current Machinery	3
EE 140	Electrical Design	3
EE 139	Illumination Engineering	2
EE 138	Industrial Electrical Power Applications	2
EE 129	Symmetrical Components	3
EE 130	Principles of Electric Power Transmission	3
EE 111-12	Electrical Measurements	4
EE 131-34	Alternating-Current Laboratory	4
EE 189-90	Proseminar in Electrical Engineering.....	2
Phys. 133	Electronic Circuits	3
Elective	.....	5
Total		34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Elective (5).

Bachelor of Mechanical Engineering

		Credit Hours
JUNIOR YEAR		
CE 123	Strength of Materials	3
CE 136	Hydraulics	3
CE 140	Materials and Hydraulics Laboratory	2
ME 111-12	Thermodynamics	6
Phys. 132	Electronics	3
Econ 1-2	Principles of Economics	6
ME 141-42	Management Problems	4
ME 7	Machine Drawing	2
ME 8	Mechanism Drawing	2
Elective	.....	5
Total		36

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Elective (5).

		Credit Hours
SENIOR YEAR		
ME 129-30	Power Plants	6
ME 127-28	Machine Design	4
ME 139	Fluid Dynamics	3
ME 140	Dynamics of Machinery	3
ME 131-32	Heating, Ventilating, Air Conditioning, and Refrigeration	4
ME 126	Methods of Manufacture	2
ME 133	Combustion Engines	2
ME 115-16	Mechanical Laboratory	4
ME 189-90	Proseminar in Mechanical Engineering.....	2
Elective	.....	4
Total.....		34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for Mechanical Engineering 189-90 (2) and Elective (4).

Bachelor of Science in Engineering

JUNIOR YEAR

	Credit Hours
CE 123	Strength of Materials 3
CE 136	Hydraulics 3
CE 140	Materials and Hydraulics Laboratory..... 2
ME 111-12	Thermodynamics 6
Phys. 132	Electronics 3
Econ. 1-2	Principles of Economics..... 6
ME 141-42	Management Problems 4
CE 187-88	Engineering Contracts and Specifications 4
Elective	..... 5

Total 36

ROTC.—Air Force ROTC students substitute Air Science 101-2 (6) for Elective (5).

SENIOR YEAR

Option	Credit Hours
As approved by the department concerned.....	34

Total 34

ROTC.—Air Force ROTC students substitute Air Science 151-52 (6) for optional courses (6) as approved by the department concerned.

The Bachelor of Science in Engineering curriculum provides training in the basic physical principles employed in engineering and in engineering methods of analysis, and in addition, offers an opportunity for study in optional fields in which the student has special interest.

Optional study can be selected from the fields of Business Administration, Chemistry, Economics, Machine Computer, Mathematics, Physics, or Statistics. The program of study in the option is formulated by the department concerned in conference with the student. The program, bearing the approval of the department concerned, must be submitted by the student to the Dean's Council for approval before the beginning of the senior year. During the period of optional study the student must comply with such regulations as the department concerned may prescribe.

The following curricula are recommended, for the guidance of students, by the several departments in which optional study is available. Variations from these curricula to satisfy the exceptional needs of individual students may be made by the department concerned.

BACHELOR OF SCIENCE IN ENGINEERING OPTIONAL CURRICULA

Business Administration Option	Credit Hours
Acct. 1-2	Introductory Accounting 6
Bus. Adm. 101	Business Organization and Combination 3
Bus. Adm. 131	Business Finance 3

Pol. Sc. 127

Elective

Commercial Law: Contracts, Sales, Agency, and Bailments 3
 Fifteen credit hours to be selected from the following:

Acct. 101: Cost Accounting
 Acct. 111: Financial Statement Analysis
 Acct. 155: ~~Business~~ Budgeting
 Bus. Adm. 105: Personnel Management in Industry
 Bus. Adm. 106: Problems in Personnel Management
 Bus. Adm. 109: Office Management
 Bus. Adm. 121: General Insurance
 Bus. Adm. 141: Principles of Marketing
 Bus. Adm. 145: Sales Management
 Bus. Adm. 150: Principles of Purchasing
 Econ. 121: Money and Banking
 Econ. 171: Economics of Public Utilities
 Econ. 172: Economics of Transportation
 Stat. 111: Business and Economic Statistics

Chemistry Option

Chem. 21
 Chem. 22
 Chem. 111-12
 Chem. 113-14
 Chem. 122
 Chem. 135
 or 155
 Chem. 151-52
 Elective

Qualitative Inorganic Analysis 4
 Quantitative Inorganic Analysis I 4
 Physical Chemistry Lectures 6
 Physical Chemistry Laboratory 4
 Quantitative Inorganic Analysis II 4
 Inorganic Chemistry: Preparations 2
 Organic Chemistry: Preparations 8
 Organic Chemistry 12
 Two years of German recommended

Economics Option

Econ. 101-2
 Econ. 121
 Econ. 122
 Econ. 141-42
 Stat. 111
 Stat. 112
 Elective

Economic Analysis 6
 Money and Banking 3
 The Supply and Control of Money 3
 Labor Economics 6
 Business and Economic Statistics I 3
 Business and Economic Statistics II 3
 Six credit hours in Economics, Statistics, or Business Administration selected with the approval of the Department of Economics.

Machine Computer Option

(Junior Year)

ME 111-12
 CE 123
 CE 136
 EE 107
 Phys. 132
 Stat. 157-58
 Math. 112
 Math. 205
 Elective

Thermodynamics 6
 Strength of Materials 3
 Hydraulics 3
 Alternating-Current Circuits 3
 Electronics 6
 Mathematical Statistics 3
 Mathematics for Engineers and Scientists 3
 Modern Algebra 6

(Senior Year)

ME 141-42
 Phys. 133

Management Problems 4
 Electronic Circuits 3

EE 115	Advanced Network Theory I.....	3
EE 123	Advanced Network Laboratory	2
EE 148	Applications of Electronic Devices I	3
EE 150	Electronic Devices Laboratory	2
EE 171	Modern Computing Machines	3
EE 172	Machine Computer Circuitry	3
Math. 126	Advanced Analytic Geometry	3
Math. 143-44	Numerical Analysis	6
Elective	.....	2
Mathematics Option		
Fifteen credit hours of mathematics beyond calculus, in second- and third-group courses.		
Physics Option		
Math. 132	Differential Equations	3
Phys. 106	Optics	3
Phys. 113-14	Atomic and Statistical Physics	6
Phys. 132	Electronics	3
Phys. 155	Advanced Physical Measurements	3
Statistics Option		
Stat. 91-92	Principles of Statistical Methods	6
Stat. 117	Analysis of Variance	3
Stat. 118	Correlation and the Chi-Square Test	3
Stat. 155-56	Mathematical Probability	6
Stat. 157-58	Mathematical Statistics	6

THE MASTER'S DEGREES

The Master's degrees are: Master of Science in Engineering and Master of Engineering Administration.

THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING

Upon the satisfactory completion of the requirements of the School of Engineering the degree of Master of Science in Engineering is conferred. The discipline of this degree is designed to lead to a mastery of scientific principles and methods as they are applied in engineering. It is conceived that this objective can be served best by providing a relationship in which the intellectual needs and desires of the student are an important element in determining the curriculum. To this end the responsibility for the student's program of study is established in a Committee on Graduate Studies composed of members of the University Faculty and specialists selected from the engineering profession. Programs of study are prescribed for each candidate by the Committee on Graduate Studies or an assigned adviser, in accordance with his state of knowledge and needs, and as required to achieve the objective of mastery of principles and methods.

ADMISSION TO CANDIDACY

Application for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Committee on Graduate Studies of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline and must have acceptable personal qualities. Applicants holding Bachelor's degrees in engineering from a recognized institution, and whose record, in the opinion of the Committee on Graduate Studies gives evidence of adequate preparation for graduate study may be admitted to candidacy for the graduate degree. Applicants who do not hold a satisfactory Bachelor's degree in engineering, or whose adequacy of preparation is questioned may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

ADVANCED STANDING

Graduate study completed prior to admission to candidacy for the graduate degree in the School of Engineering will be considered by the Committee on Graduate Studies in prescribing the candidate's program of study provided it contributes substantially to the achievement of mastery of principles and methods. In any case a minimum of one year full-time study must be completed under the Committee on Graduate Studies.

REQUIREMENTS FOR THE DEGREE

The candidate for the degree must complete a minimum of one year of full-time study under the guidance of the Committee on Graduate Studies; complete the program prescribed by that committee, including course examinations; and demonstrate, by passing a comprehensive examination, substantial mastery of scientific principles and methods of their use in the area of his interest. This examination may be written, oral, or both, at the discretion of the Committee.

Candidates with limited areas of unsatisfactory preparation may be required to complete additional necessary remedial or preparatory study.

All of the work applied toward this degree must be accomplished under the guidance of the Committee on Graduate Studies.

Course work applied to satisfy requirements for another degree may not be applied to satisfy requirements for the graduate degree in engineering.

With the approval of the Committee on Graduate Studies the candidate may include a thesis in his program. He will be subject to an oral examination on his thesis.

The candidate's scholarship must be satisfactory to the Committee, and will commonly be required to be equivalent to the grade of *B*. A student whose work is unsatisfactory will be suspended by the Dean, upon the recommendation of the Committee on Graduate Studies or the student's assigned adviser.

The candidate must complete the requirements for the degree within three years, if he is a full-time student; within five years, if he is a part-time student.

THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

Upon the satisfactory completion of the requirements of the School of Engineering the degree of Master of Engineering Administration is conferred. The purpose of this program is to offer, through academic study at graduate level, a means of improving the management and administrative ability of government and industrial engineers and scientists.

The objective of this graduate discipline is to develop a mastery of management principles and practices as they apply in the administration of engineering and scientific activities. Knowledge and understanding are sought rather than breadth of familiarity with techniques.

Study programs are prescribed for each candidate, in accordance with his preparation and objective, by the Committee on Graduate Studies. These programs are not curricula common to all candidates for the degree. They may consist of formal courses, independent study, or individual study under assigned faculty, and move freely among departments and fields of study. Each candidate is under the personal guidance of a selected faculty member.

ADMISSION TO CANDIDACY

Applications for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Committee on Graduate Studies of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline; must have acceptable personal qualities; must hold a Bachelor's degree in engineering or science from a recognized institution; must have had some supervisory or administrative experience; and give evidence of preparation, which in the opinion of the Committee, is adequate for graduate study.

Applicants who lack a satisfactory Bachelor's degree or whose adequacy of preparation is questioned may be admitted to candidacy upon passing qualifying examinations prescribed by the Committee. Appli-

cants lacking satisfactory supervisory or administrative experience may, under certain circumstances, be considered by the Committee.

ADVANCED STANDING

Graduate study completed prior to admission to candidacy for the degree will be considered in prescribing the program of study, provided it contributes substantially to the achievement of the objective of the discipline. In any case a minimum of one year full-time study must be completed under the Committee of Graduate Studies.

Study applied to satisfy the requirements for another degree may not be applied toward the degree of Master of Engineering Administration.

REQUIREMENTS FOR THE DEGREE

The candidate for the degree of Master of Engineering Administration must successfully complete a minimum of one year full-time study as prescribed by the Committee on Graduate Studies, including course examinations; pass a comprehensive examination on his area of study; and solve a comprehensive problem in engineering administration. At the discretion of the Committee the examination may be written, oral, or both. Candidates with limited areas of unsatisfactory preparation may be required to complete necessary remedial study in addition to their graduate programs.

The candidate's scholarship must be satisfactory to the Committee, and will commonly be required to be equivalent to the grade of B. A student whose work is unsatisfactory will be suspended by the Dean upon the recommendation of the Committee or the adviser.

The problem which each candidate is required to solve may be proposed by the student, but it must be approved by the Committee. Its purpose is to demonstrate the candidate's ability to integrate his studies in the solution of a typical administrative problem of a comprehensive nature, requiring for its solution a variety of principles and procedures. The candidate is subject to oral examination on his problem at the discretion of the Committee.

The work for the degree, including the comprehensive examination, must be completed within three years by a full-time student, or within five years by a part-time student.

THE PROFESSIONAL DEGREES

The professional degree of Civil Engineer, Electrical Engineer, or Mechanical Engineer may be conferred upon a graduate of the School of Engineering who has demonstrated his professional ability.

REQUIREMENTS FOR THE DEGREE

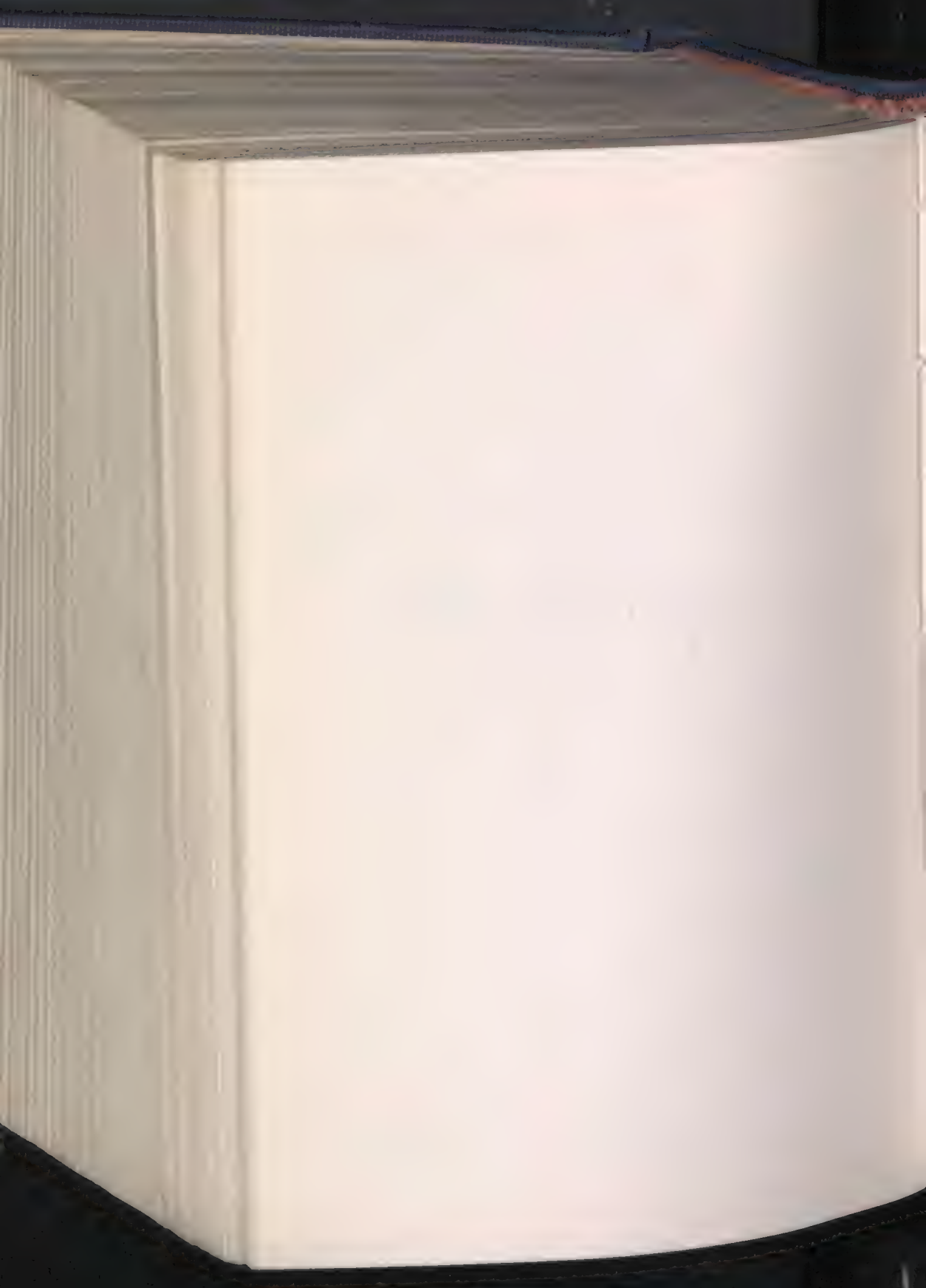
1. Application may not be made sooner than three years after graduation, and then only if the candidate has had definite responsibility for engineering work of substantial importance.

2. A detailed statement of the candidate's experience, references, the degree sought, and the title of the dissertation must be filed with the Dean eight months before the Commencement at which the degree is to be conferred.

Detailed information concerning the preparation of the dissertation may be obtained from the Office of the Dean.

3. The dissertation will be read for acceptance by an examining committee appointed by the Dean to include members of the Faculty of the School of Engineering and at least one expert from engineering practice. The committee will report its recommendation to the Faculty of the School of Engineering.

COURSES OF INSTRUCTION



COURSES OF INSTRUCTION

On the following pages, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered in the School of Engineering. Also listed are courses offered by other schools and colleges of the University, but required or accepted as electives for the degrees in engineering. The courses as here listed are subject to some slight change. Students are referred to the schedule of classes, which is available prior to the opening of each term, for the hourly scheduling of all courses of instruction.

The University reserves the right to withdraw any course announced.

INDICATION OF THE AMOUNT OF CREDIT

The number of credit hours given for the satisfactory completion of a course is, in most cases, indicated in parenthesis after the name of the course. Thus, a year course giving three hours of credit each term is marked (3-3), and a term course giving three hours of credit is marked (3). A credit hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one term.

A dagger (†) preceding the number of a year course indicates that the course may not be entered in the second term and that credit will not be given until the work of both terms has been completed.

CIVIL ENGINEERING

- 2 *Plane Surveying* (2)
Principles, methods, and instruments used in surveying; with field work. Prerequisite: Trigonometry. Surveying fee, \$12. Lecture and field work.
- 21 *Analytical Mechanics: Statics* (2)
Composition and resolution of forces; axial stresses, centroids; friction. Prerequisite: Physics 6; prerequisite or concurrent registration: Mathematics 20.
- 22 *Analytical Mechanics: Dynamics* (3)
Kinematics of a particle; kinetics of a body in translation, rotation, and plane motion; work and energy; impulse and momentum; simple vibrations. Prerequisite: Civil Engineering 21.
- 23 *Higher Surveying* (4)
Elements of geodesy, triangulation, topography, hydrography, and precise and trigonometric leveling, with field work. Prerequisite: Civil Engineering 2. Surveying fee, \$12. Lecture, laboratory, and field work.

- 24 Elementary Photogrammetry (3)**
History and development of photogrammetry; fundamental principles, methods, and instruments used in photographic surveying and production of maps; photographic interpretation; principles of stereoscopy. Laboratory work with photographs and instruments in determination of scale, tilt, relief, and map plotting. Prerequisite: Civil Engineering 23; Physics 6. Laboratory fee, \$3.
- 25-26 Engineering Materials (2-2)**
Emphasis on properties and uses of nonmetallic materials such as cements, fuels, and plastics; and metallic materials including steel, copper, aluminum, and alloys. Prerequisite or concurrent registration: Chemistry 12.
- 123 Strength of Materials (3)**
Tension, compression, shear, flexure, and torsion; deflection; combined and working stresses. Prerequisite: Civil Engineering 21.
- 136 Hydraulics (3)**
Introduction to the application of principles of mechanics to compressible and incompressible fluids; includes hydrostatics, flow in pipes and channels, and flow measurement. Prerequisite: Civil Engineering 22.
- 140 Materials and Hydraulics Laboratory (2)**
Determination of the properties of materials by mechanical tests, and a study of the flow of fluids. Prerequisite: Civil Engineering 123; prerequisite or concurrent registration: Civil Engineering 26 and 136. Laboratory fee, \$9.
- 141 Graphic Statics (3)**
Fundamental principles, analyses of beams, determination of stresses in roof trusses and framed bents. Prerequisite or concurrent registration: Civil Engineering 123. Drafting room fee, \$2. Lecture and drafting room.
- 142 Bridge Stresses (3)**
Determination of stresses in modern types of bridge trusses. Prerequisite: Civil Engineering 141. Drafting-room fee, \$2. Lecture and drafting room.
- 147-48 Structural Design (2-2)**
Computations and drawings for the design of steel structures. Prerequisite: Civil Engineering 142. Drafting-room fee, \$5 a term. Lecture and drafting room.
- 149-50 Concrete and Masonry Construction (3-3)**
Plain concrete, general properties and theory of reinforced concrete, foundations, and retaining walls. Prerequisite: Civil Engineering 25 and 123. Civil Engineering 149 laboratory fee, \$9; Civil Engineering 150 drafting-room fee, \$2. Lecture, laboratory, and drafting room.
- 151-52 Statically Indeterminate Structures (2-2)**
A study of such structures as continuous spans, rigid frames, and arches by methods of work, slope deflection, and moment distribution. Prerequisite: Civil Engineering 142.

- 164 *Highway Engineering* (3)
Highway economics, location, construction, and maintenance. Prerequisite: Civil Engineering 25.
- 181-82 *Water Supply and Sewerage* (3-3)
Collection, storage, purification, and distribution of water; sewerage systems and treatment of sewage. Prerequisite: Civil Engineering 136; Chemistry 12.
- 187-88 *Engineering Contracts and Specifications* (2-2)
Contract essentials, types, and legal principles; analysis and preparation of specifications. Prerequisite or concurrent registration: Civil Engineering 25-26.
- 189-90 *Proseminar in Civil Engineering* (1-1)
Civil Engineering 189 is prerequisite to Civil Engineering 190.
- 192 *Soil Mechanics* (3)
The basic concepts of the behavior of soil as an engineering material. Prerequisite: Civil Engineering 25, 123, and 136.
- 201 *Advanced Mechanics of Materials* (3)
Advanced topics in the mechanics of materials. Stresses at a point, thick cylinders, general bending, torsion, localized stress, and stress concentration.
- 202 *Applied Elasticity* (3)
The theory of elasticity as applied in three-dimensional analysis of stress, strain, torsion, and bending.
- 203 *Foundation Problems* (3)
The integration of structural theory and soil mechanics, as applied to foundation, retaining wall, slope stability, and drainage problems. The interrelationship of structural action and soil stability is emphasized.
- 204 *Theory of Structures* (3)
Advanced analysis and design of indeterminate structures, such as, continuous and suspension bridges, high building frames, arches, rigid frames, and columns.
- 205 *Prestressed Concrete Theory* (3)
A study of the theory and applications of prestressed concrete, including the design of prestressed concrete structures.
- 299-300 *Thesis* (3-3)

ELECTRICAL ENGINEERING

- 9-10 *Elements of Electrical Engineering* (3-3)
Electrical Engineering 9: magnetic and electric circuits, direct-current instruments and machines. Electrical Engineering 10: alternating-current circuits, instruments, and machines. Prerequisite: Physics 7; prerequisite or concurrent registration: Mathematics 25.

105-6 Direct-Current Laboratory (2-2)

For the student majoring in electrical engineering. A course in measurements and direct-current dynamo laboratory. Prerequisite: Electrical Engineering 9-10. Laboratory fee, \$9 a term.

107 Alternating-Current Circuits (3)

Alternating-current-circuit theory. Extensive consideration is given to harmonic analysis and to the study of harmonics in both single-phase and polyphase circuits. Prerequisite: Electrical Engineering 10.

108 Alternating-Current Machinery (3)

Transformers and synchronous generators. Prerequisite: Electrical Engineering 107.

109 Alternating-Current Machinery (3)

Synchronous motors, polyphase induction motors, single-phase motors, converters, mercury arc rectifiers. Prerequisite: Electrical Engineering 108.

111-12 Electrical Measurements (2-2)

Theory of direct-current and alternating-current instruments, bridges, and meters. Prerequisite or concurrent registration: Electrical Engineering 107.

115 Advanced Network Theory I (3)

Theory of resonance, linear networks, transmission lines, and filters. Prerequisite: Electrical Engineering 107.

116 Advanced Network Theory II (3)

Theory of transmission at UHF and VHF frequencies including Maxwell's equations, wave guides, and methods of power generation at these frequencies. Prerequisite: Electrical Engineering 115 and Physics 132; prerequisite or concurrent registration: Physics 133.

123 Advanced Network Laboratory I (2)

A laboratory course associated with Electrical Engineering 115. Laboratory fee, \$9.

124 Advanced Network Laboratory II (2)

A laboratory course associated with Electrical Engineering 116. Prerequisite: Electrical Engineering 123. Laboratory fee, \$9.

129 Symmetrical Components (3)

Theory and application of symmetrical components in unbalanced circuits, alternating-current machinery, and transmission lines. Prerequisite: Electrical Engineering 108.

130 Principles of Electric Power Transmission (3)

Mechanical and electrical characteristics of transmission lines, approximate and rigorous solutions by means of hyperbolic functions, steady-state and elementary transient considerations, the more important phases of distribution of electrical energy. Prerequisite: Electrical Engineering 129.

- 133-34 *Alternating-Current Laboratory (2-2)*
A continuation of Electrical Engineering 105-6, with experiments on alternating-current circuits, instruments, and machinery. Prerequisite: Electrical Engineering 106 and 108. Laboratory fee, \$9 a term.
- 138 *Industrial Electrical Power Applications (2)*
The characteristics of the various types of electrical motors and other power appliances, and the principles governing their applications in industry. Prerequisite: Electrical Engineering 10.
- 139 *Illumination Engineering (2)*
Principles and practices in present-day illumination engineering. Prerequisite: Electrical Engineering 10.
- 140 *Electrical Design (3)*
Principles of design, with reference to materials of construction and electrical equipment. Practical exercises are assigned in connection with classroom work. Prerequisite: Electrical Engineering 109. Lecture and laboratory.
- 148 *Applications of Electronic Devices (3)*
Practical applications of electronic devices such as power supplies, voltage regulators, multivibrators, electronic counters, and servo-mechanism. Prerequisite: Physics 133.
- 150 *Electronic Devices Laboratory (2)*
A laboratory course associated with Electrical Engineering 148. Laboratory fee, \$9.
- 171 *Modern Computing Machines (3)*
Introduction to modern computing machines; basic principles, number systems, language, control, programming, types of machines and principles of operation. Prerequisite: Electrical Engineering 107, Statistics 158, and Mathematics 265.
- 172 *Machine Computer Circuitry (3)*
Timing, counting, computer circuits. Relation of mathematical operations to circuitry. Basic storage and switching circuits. Prerequisite: Electrical Engineering 115, Physics 132.
- 189-90 *Proseminar in Electrical Engineering (1-1)*
Prerequisite: Electrical Engineering 108.
- 201 *Radio Wave Propagation (3)*
Theory of the radiation and propagation of electromagnetic waves in space, with consideration of practical application to radio problems.
- 202 *Microwave Electronics (3)*
Behavior of vacuum tubes at ultra-high frequencies. Theory and applications of microwave oscillators and transmission circuits. Measurement problems.
- 203 *Operational Analysis of Linear Systems (3)*
Analysis of circuits under steady-state and transient conditions by operational methods. Generality of the circuit concept.

206 *Electronic Circuit Problems* (3)

Analysis and design of low power vacuum tube and transistor circuits: amplifiers, oscillators, detectors, modulators, receivers, counters, timers; theory of measurements, non-linear analysis.

299-300 *Thesis* (3-3)

MECHANICAL ENGINEERING

1 *Engineering Survey and Orientation* (1)

Open to freshmen only.

3 *Mechanical Drawing* (2)

Drafting-room fee, \$5. Drafting (6 hours).

4 *Descriptive Geometry* (2)

Drafting-room fee, \$5. Drafting (6 hours).

7 *Machine Drawing* (2)

Prerequisite: Mechanical Engineering 3 and 4. Drafting-room fee, \$5. Drafting (6 hours).

8 *Mechanism Drawing* (2)

Prerequisite: Mechanical Engineering 3, 4, and 13. Prerequisite or concurrent registration: Mechanical Engineering 14. Drafting-room fee, \$5. Drafting (6 hours).

13-14 *Mechanism* (2-2)

Prerequisite: Mathematics 19. Prerequisite or concurrent registration: Mathematics 20.

111-12 *Thermodynamics* (3-3)

With introductory study of laws of heat transmission. Prerequisite: junior status.

115-16 *Mechanical Laboratory* (2-2)

Calibration of instruments; calorimetry; testing of prime movers, auxiliaries, combustion engines, and refrigerating machines. Eight-hour power-plant test required. Mechanical Engineering 115 prerequisite; Mechanical Engineering 112, Electrical Engineering 10; prerequisite or concurrent registration: Mechanical Engineering 133, 139, Mechanical Engineering 116 prerequisite: Mechanical Engineering 115; prerequisite or concurrent registration: Mechanical Engineering 132, 140. Laboratory fee, \$9 a term. Laboratory (6 hours).

126 *Methods of Manufacture* (2)

Foundry practices, forging, welding, machine tools, inspection, factory processes. Inspection trips required. Prerequisite: Mechanical Engineering 8 and 14; Civil Engineering 26.

127-28 *Machine Design* (2-2)

With stress-analysis computation and design periods (6 hours). Prerequisite: Mechanical Engineering 7, 8, and 112; Civil Engineering 26, 136, and 140. Drafting-room fee, \$3 a term.

- 129-30 *Power Plants* (3-3)
Study of design, layout, installation, and operation of power plants and equipment, with emphasis on heat transmission and instrumentation. Prerequisite: Mechanical Engineering 112.
- 131-32 *Heating, Ventilating, Air Conditioning, and Refrigeration* (2-2)
Principles and applications. Prerequisite: Mechanical Engineering 112; Civil Engineering 26 and 136.
- 133 *Combustion Engines* (2)
Study of spark-ignition and compression-ignition engines, combustion, performance, fuels, knock, supercharging and combustion charts. Inspection trips required. Prerequisite: Mechanical Engineering 112; senior status.
- 139 *Fluid Dynamics* (3)
Theory and application of fluid mechanics. Prerequisite: Mechanical Engineering 112; Civil Engineering 136.
- 140 *Dynamics of Machinery* (3)
Inertia effects, balancing, vibration phenomena. Prerequisite: Mechanical Engineering 7, 8, and 14; Civil Engineering 140.
- 141-42 *Management Problems* (2-2)
Organization of an industrial enterprise; the handling and training of men.
- †189-90 *Proseminar in Mechanical Engineering* (1-1)
Prerequisite: Speech 1; senior status.
- 201 *Instrumentation* (3)
Theory of measurement and instrumentation systems. Physical principles involved in research and commercial instrumentation. Design problems.
- 202 *Advanced Dynamics of Machinery* (3)
Free, damped, and forced vibrations of mechanical systems; the dynamic response of elastic systems. Selected topics in vibration isolation and control.
- 203 *Advanced Fluid Dynamics* (3)
Advanced mechanics of real and ideal fluids, potential theory, turbulence, boundary layer mechanics, hydrodynamic lubrication.
- 204 *Heat Transfer Thermodynamics* (3)
Advanced problems in compression of gases and liquids; combustion. Heat transfer problems involving radiation, convection, conduction, evaporation, and condensation.
- 217-18 *Seminar in Engineering* (1-1)
- 299-300 *Thesis* (3-3)

REQUIRED AND ELECTIVE COURSES FROM OTHER DEPARTMENTS

On the following pages appears a partial list of courses in other departments of instruction which are closely related to engineering. Some of these courses are prescribed in the several curricula of the School of Engineering; all are recommended as suitable elective subjects for engineering students.

ACCOUNTING

- 1-2 *Introductory Accounting* (3-3)
Basic principles of accounting records, preparation of work sheets and financial statements, introduction to cost accounting and valuation, and income determination problems.
- 101 *Cost Accounting* (3)
Theory and purposes of cost accounting, systems of cost control and determination, analysis and interpretation of cost data.
- 111 *Financial Statement Analysis* (3)
Methods and techniques of preparing, analyzing and interpreting financial statements. Determination and interpretation of trends and ratios.
- 155 *Business Budgeting* (3)
Principles, preparation, and administration of a business budget.

AIR SCIENCE

- 1-2 *Air Science I—Freshman Year* (2-2)
- 51-52 *Air Science II—Sophomore Year* (2-2)
- 101-2 *Air Science III—Junior Year* (3-3)
- 151-52 *Air Science IV—Senior Year* (3-3)

BUSINESS ADMINISTRATION

- 101 *Business Organization and Combination* (3)
Simple and interrelated forms of business enterprise and their control by government.
- 105 *Personnel Management in Industry* (3)
Organization and work of the personnel department, human relations in business.
- 106 *Problems in Personnel Management* (3)
Illustrated by cases drawn from business and industry.

- 109 *Office Management* (3)
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.
- 121 *General Insurance* (3)
Principles of property, life, marine, and casualty insurance; the function of insurance in the economic life of a business and individual.
- 131 *Business Finance* (3)
Principles of financing business enterprises. Prerequisite: Accounting 1-2.
- 141 *Principles of Marketing* (3)
Survey of marketing, stressing consumption, retailing, wholesaling, and sales management; entire marketing structure and its relation to the total economy.
- 145 *Sales Management* (3)
Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, analysis and control of distribution costs. Prerequisite: Business Administration 141.
- 150 *Principles of Purchasing* (3)
Organization for purchasing, purchasing policies, market relationships, selection of merchandise, purchasing information and records.

CHEMISTRY

- †11-12 *General Chemistry* (4-4)
Prerequisite: one year of high school algebra. Laboratory fee, \$15 a term. Lecture, laboratory, and recitation.
- 21 *Qualitative Inorganic Analysis* (4)
Prerequisite: Chemistry 12. Laboratory fee, \$15. Lecture and laboratory.
- 22 *Quantitative Inorganic Analysis I* (4)
Prerequisite: Chemistry 21. Laboratory fee, \$15. Lecture and laboratory.
- †11-12 *Physical Chemistry Lectures* (3-3)
Students registering for Chemistry 111-12 must register concurrently for Chemistry 113-14 unless they already have credit for physical chemistry laboratory. Prerequisite: Chemistry 22 and 152; Mathematics 20; Physics 8.
- †113-14 *Physical Chemistry Laboratory* (2-2)
Laboratory to accompany Chemistry 111-12. Students registering for Chemistry 113-14 must register concurrently for Chemistry 111-12 unless they already have credit for lectures in physical chemistry. Laboratory fee, \$15 a term.

- 122 *Quantitative Inorganic Analysis II* (4)
A continuation of Chemistry 22. Prerequisite: Chemistry 22. Laboratory fee, \$15. Lecture and laboratory.
- 135 *Inorganic Chemistry: Preparations* (2)
Prerequisite: Chemistry 152; prerequisite or concurrent registration: Chemistry 111-12 and 113-14. Laboratory fee, \$15.
- †151-52 *Organic Chemistry* (4-4)
Chemistry of the carbon compounds. Prerequisite: Chemistry 21. Chemistry 151 laboratory fee, \$9; Chemistry 152 laboratory fee, \$15. Lecture and laboratory.
- 155 *Organic Chemistry: Preparations* (2 or 3)
The synthesis of organic compounds and the application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151-52. Prerequisite: Chemistry 22 and 152. Laboratory fee, \$9 a credit hour.

ECONOMICS*

- 1-2 *Principles of Economics* (3-3)
Survey of the major economic principles, institutions, and problems in contemporary economic life. Economics 1 is prerequisite to Economics 2.
- 101-2 *Economic Analysis* (3-3)
Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services; welfare economics. Economics 101 is prerequisite to Economics 102.
- 121 *Money and Banking* (3)
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.
- 141-42 *Labor Economics* (3-3)
Wages, hours, and employment; labor organizations; labor legislation and federal administrative boards.
- 171 *Economics of Transportation* (3)
History, organization, competition, rates, and regulation of motor, air, rail, and water carriers.
- 172 *Economics of Public Utilities* (3)
Regulation, valuation, rate making, development, and public policy.

* Economics 1-2 is prerequisite to all other courses in Economics.

ENGLISH

- 1 *English Composition** (3)
Review of grammar, exercises in composition, readings.
- 2 *English Composition** (3)
Exercises in composition, readings. The second term of the six-hour English Composition course required of all students.
- 11 *The Writing of Reports* (3)
Theory and practice in the writing of technical reports. Prerequisite: English 1, 2.

MATHEMATICS

- 3 *College Algebra* (3)
Prerequisite: one year each of high school algebra and high school geometry.
- 6 *Plane Trigonometry* (3)
Prerequisite: two years of high school algebra and one year of high school geometry or Mathematics 3 (or concurrent registration therefor).
- 12 *Analytic Geometry* (3)
Prerequisite: Mathematics 3 and 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry.
- 19 *Differential Calculus* (3)
Prerequisite: Mathematics 12.
- 20 *Integral Calculus* (3)
Prerequisite: Mathematics 19.
- 102 *Fundamental Concepts of Mathematics* (3)
- 103 *Calculus and Differential Equations* (3)
Prerequisite: Mathematics 20.
- 112 *Mathematics for Engineers and Scientists* (3)
Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 132 or 103.
- 123 *Theory of Equations* (3)
- 125 *Advanced Algebra* (3)

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or more terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

- 126 *Advanced Analytic Geometry* (3)
 132 *Differential Equations* (3)
 134 *Introduction to Boundary Value Problems* (3)
 Prerequisite: Mathematics 103 or 132.
 †135-36 *Projective Geometry* (2-2)
 139 *Advanced Calculus* (3)
 140 *Introduction to Analysis* (3)
 141 *Introduction to Infinite Series* (3)
 143-44 *Numerical Analysis* (3)
 Interpolation; numerical differentiation and integration; approximation and computational methods with applications; numerical solution of algebraic, transcendental, and differential equations. Prerequisite: Mathematics 103 or 132.
 167 *Fourier Series and Spherical Harmonics* (3)
 Prerequisite: Mathematics 132.
 265 *Modern Algebra* (3)

PHYSICAL EDUCATION

- 1-2 *Freshman Physical Education* (1-1)
 Locker and towel fee, \$3.
 11-12 *Sophomore Physical Education* (1-1)
 Locker and towel fee, \$3.

PHYSICS

- 5 *General Physics* (3)
 Light, heat, force, energy, and the properties of matter. Prerequisite: high school algebra and plane geometry. Material fee, \$9. Lecture, laboratory, and recitation.
 6 *General Physics* (3)
 Mechanics, wave-motion and sound. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, \$9. Lecture, laboratory, and recitation.
 7 *General Physics* (3)
 Elementary electricity and magnetism. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, \$9. Lecture, laboratory and recitation.

* This prerequisite may be waived for students who have credit for a high school Physics course which included individual laboratory work, providing they pass the qualifying examination given at the dates specified in the University calendar.

8 General Physics (3)

This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X-rays), atomic and molecular structure, radioactivity, nuclear physics, the quantum theory of matter and radiation, and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7.

55 Physical Measurements (3)

Theory and methods of precise measurement. Prerequisite: Physics 6 and 7; Mathematics 19. Material fee, \$9. Lecture and laboratory.

102 Heat and Thermodynamics (3)

Thermometry, calorimetry, heat conduction, the laws of thermodynamics with application to physical systems. Prerequisite: Physics 8; Mathematics 20.

105 Principles of Electricity (3)

Electricity and magnetism; circuit theory, including elementary alternating-current circuits; terrestrial magnetism; atmospheric electricity. Prerequisite: Physics 8; Mathematics 20.

106 Optics (3)

Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 8; Mathematics 20.

113 Atomic Physics (3)

Properties of the electron and the other fundamental particles of physics, the photoelectric effect, X-rays and crystal structure, wave aspects of particles, elements of the quantum theory, atomic spectra and atomic structure. Prerequisite: Physics 8; Mathematics 20.

114 Statistical Physics (3)

Applications of classical and quantum statistics to the physics of solids, liquids, and gases. Topics discussed include fluctuations in gases and liquids, equipartition of energy, specific heats of solids, and experimental errors. Prerequisite: Physics 113.

123 Nuclear Physics (3)

Structure and stability of atomic nuclei, spontaneous transformations, nuclear reactions, astrophysical applications, nuclear fission. Prerequisite: Physics 113.

128 Sound (3)

Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 8; Mathematics 20.

132 Electronics (3)

The phenomena of electron emission from solids; the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 8 and 55, and Physics 105 or Electrical Engineering 10. Material fee, \$9. Lecture and laboratory.

133 Electronic Circuits (3)

A continuation of Physics 132. Includes basic radiofrequency applications of electron tubes, and special types of tubes such as klystrons, resonators, and magnetrons. Lectures and problems. Prerequisite: Physics 132; Electrical Engineering 107.

155-56 Advanced Physical Measurements (3-3)

Optional programs of experiments in electricity and magnetism, optics, or atomic physics. Corresponding prerequisites are Physics 105, 106, or 113, or the equivalent. In addition, Physics 55 is a general prerequisite. Material fee, \$9.

POLITICAL SCIENCE***9-10 Government of the United States (3-3)****127 Commercial Law: Contracts, Sales, Agency, and Bailments (3)****SPEECH****1 Effective Speaking (3)****STATISTICS****†91-92 Principles of Statistical Methods (3-3)**

Prerequisite: one entrance unit in algebra. Laboratory fee, \$6 a term. Lecture and laboratory.

111 Business and Economic Statistics I (3)

Characteristic values, measures of variability, sampling processes, sampling distributions, and simple correlation. Admission by permission of the instructor.

112 Business and Economic Statistics II (3)

Multiple and partial correlation, time series analysis, index numbers, business cycles, demand functions, and depreciation schedules. Prerequisite: Statistics 111 or the equivalent.

117 Analysis of Variance (3)

Prerequisite: Statistics 91-92.

118 Correlation and the Chi-Square Test (3)

Prerequisite: Statistics 91-92.

†155-56 Mathematical Probability (3-3)

Prerequisite: Mathematics 20 and Statistics 91-92.

†157-58 Mathematical Statistics (3-3)

Prerequisite or concurrent registration: Statistics 155-56.

*Political Science 9-10 is prerequisite to all other courses in Political Science.

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objects of this Association are to unite the graduates in closer sympathy and to promote the general welfare of the University. The following persons are eligible for *active* membership: graduates of any college, school, or division of the University; holders of honorary degrees from the University; and members of the Board of Trustees and of the Faculty of the University. Any person who has matriculated, who has been in regular attendance for one year, and who has left the University in good standing, is eligible for *associate* membership.

The Alumni Office is situated at 2018 I Street, Washington, D. C. Alumni are urged to keep the office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering in closer fellowship, to promote the general welfare of the School of Engineering and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

THE GRADUATE ENDOWMENT FUND

The Graduate Endowment Fund was founded by the class of 1926 with the object of providing endowment to be used for the development of the University. Membership is limited to seniors and graduates who sign a pledge of \$100, payable annually in ten equal installments.

The pledge notes and funds are held in trust. When the principal reaches the sum of \$100,000, the Board of Administrators of the Fund may pay to the University such sums as it may vote for erection of buildings, acquisition of sites, maintenance, and purchase of equipment. At no time may money be drawn so as to leave a balance of less than \$50,000 on deposit.

On request, the Alumni Office of the University will furnish pledge blanks to alumni.

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THE SCHOOL OF EDUCATION

1954-55

THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

VOL. LIII

No. 6

THE SCHOOL OF EDUCATION

WASHINGTON, D. C.

PUBLISHED IN JULY
MCMLIV

BY THE UNIVERSITY

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CALENDAR

1954-55

CALENDAR OF THE SCHOOL OF EDUCATION

1954-55

Date	Day	Occasion
1954		
FALL TERM:		
Sept. 20	Monday	Orientation assembly for all new students
Sept. 21	Tuesday	Curriculum assembly for all new students
Sept. 22	Wednesday	Pre-advising for all new students
Sept. 23-24	Thursday and Friday	Registration
Sept. 27	Monday	Academic year begins
Oct. 8	Friday	Thesis subjects of February Master's candidates due
Oct. 15	Friday	Dissertation subjects of June Doctoral candidates due
Oct. 16	Saturday	Applications for Doctoral and Master's October comprehensive examinations due
Oct. 23	Saturday	Comprehensive examinations for Doctoral and Master's candidates
Oct. 29	Friday	Bachelor of Arts activities plans due
Nov. 11	Thursday	Fall Convocation. Holiday
Nov. 25-27	Thursday through Saturday	Thanksgiving recess
Dec. 4	Saturday	Applications for Doctoral and Master's January comprehensive examinations due
Dec. 20- Jan. 1	Monday through Saturday	Christmas recess
1955		
Jan. 3	Monday	Classes resume
		Last day for applications for degrees to be conferred in February
		Theses of February Master's candidates due
Jan. 8	Saturday	Dissertations of February Doctoral candidates due
Jan. 19	Wednesday	Comprehensive examinations for Doctoral and Master's candidates
Jan. 24- Feb. 1	Monday through Tuesday	Last day of classes for the fall term
FEB. TERM:		
Feb. 3 and 4	Thursday and Friday	Fall term examination period
Feb. 7	Monday	Registration
Feb. 18	Friday	Classes resume for the spring term
Feb. 22	Tuesday	Thesis subjects for June Master's candidates due
		Winter Convocation. Holiday

CALENDAR OF THE SCHOOL OF EDUCATION—Continued

Date	Day	Occasion
Mar 7	Monday	Activities plans due from Bachelor of Arts candidates entering the School of Education in February
March 12	Saturday	Dissertation subjects of November Doctoral candidates due
April 7	Thursday	Applications for Doctoral and Master's April comprehensive examinations due
April 8-13	Friday through Wednesday	Easter recess
April 14	Thursday	Dissertation subjects of February Doctoral candidates due
April 23	Saturday	Comprehensive examinations for Doctoral and Master's candidates
May 6	Friday	Theses of June Master's candidates due
May 18	Wednesday	Last day of classes for the spring term
May 21- June 3	Monday through Tuesday	Spring term examination period
June 5	Sunday	Baccalaureate Sermon
June 8	Wednesday	Commencement
SUMMER TERM: June 13	Monday	Registration and the first day of classes of the pre-session
June 20	Monday	Registration for the eight-week term
June 21	Tuesday	Classes begin for the eight-week term
July 1	Friday	Pre-session ends
July 4	Monday	Independence Day. Holiday
July 5	Tuesday	Registration and the first day of classes of the six-week session
July 20	Wednesday	Applications for Doctoral and Master's July comprehensive examinations due
July 27	Wednesday	Comprehensive examinations for Doctoral and Master's candidates
Aug. 12	Friday	Six-week session ends
Aug. 15	Monday	Eight-week term ends
		Theses of November Master's candidates due
		Registration and first day of classes of the post-session
Sept. 2	Friday	Post-session ends
Sept. 9	Friday	Dissertations of November Doctoral candidates due
Sept. 22 and 23	Thursday and Friday	Registration for the fall term of the academic year 1955-56

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 ‡ Elected by the Faculty.

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GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, supervisors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics.* It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of Washington and the vicinity may complete all the requirements for a degree without giving up their positions.

HISTORICAL DEVELOPMENT

The University began offering professional courses for teachers in 1904-5 and in 1907 it established a Division of Education. In 1909, the Division of Education became the Teachers College which, in its early years, was concerned largely with teacher preparation on the undergraduate level.

In 1928, the Teachers College became the School of Education and greater provision was made for advanced study. Since that time the graduate enrollment has steadily increased with the result that today the School has a considerably larger number of graduate than undergraduate students.

ADVANTAGES OF STUDY IN THE NATION'S CAPITAL

Washington is rich in the resources needed by teachers to supplement classroom instruction. In addition to the library facilities of the University, the Library of Congress, the Library of the Office of Education, and many special collections provide unexcelled opportunities for reading and research. The operation of all branches of the National Government may be observed. Among the art galleries are the National Gallery of Art, the Corcoran Gallery of Art, the Freer Art Gallery, Phillips Memorial Gallery, and the National Museum. The music calendar of Washington is a full one, and includes concerts by the National Symphony Orchestra, Philadelphia Orchestra, and the Boston

* The Department of Home Economics offers a curriculum in home-making. Its program is described in a special announcement.

Symphony Orchestra. Those interested in science find many resources for study at the National Museum, the National Zoological Park, the United States Botanic Garden, and the Aquarium of the Fish and Wildlife Service, Department of the Interior. Teachers have unique opportunities to become acquainted with the work of the Office of Education, the National Education Association, the American Council on Education, and many other national organizations with headquarters in Washington.

ACADEMIC STATUS

The George Washington University is accredited by the regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Education is accredited by the National Council for the Accreditation of Teacher Education, is a member of the American Association of Colleges for Teacher Education, and was a charter member of the National Association of Colleges and Departments of Education prior to the merger of that association with others to form the American Association of Colleges for Teacher Education.

THE EDUCATION OF TEACHERS

PROGRAMS LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR MEN

There are three curricula leading to this degree. The Single-Major and Subject-Certification Teacher's Course is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Course prepares for the teaching of physical education in the larger schools. The Physical Education and Recreation Course has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The following courses, to be taken in the Junior College, are required for admission to the School of Education. Students with deficiencies must make up those deficiencies as prerequisite to the Junior College curriculum.

	Credit Hours
English	English 1, 2..... 6
Social Studies	History 39-40, 71-72, Political Science 9-10, or Sociology 1-2 (Freshman year)..... 6
	Economics, History, or Political Science (Sophomore year)..... 6
Science	Biology 1-2 or Zoology 1-2 (Freshman year)..... 6 or 8
Physical Education	
Curriculum	
Requirements	Physical Education 43-44, 47; Speech 1 or 11 (Freshman year)..... 9
	Physical Education 45-46, 49, 50, 58; Psychology 1, 22 (Sophomore year)..... 18
Elective	7-9
	68
Total	

The minimum requirements for this degree are 66 credit hours, distributed as follows:

Single-Major and Subject-Certification Teacher's Course

The minimum requirements for this degree are twenty-one credit hours in education, twenty-four credit hours in physical education, eighteen credit hours in an academic teaching field, and three credit hours in physiology, distributed as follows:

JUNIOR YEAR	Credit Hours	SENIOR YEAR	Credit Hours
Learning and Teaching	6	Common Teaching Skills	3
Society and the School	6	Observation and Student Teaching	6-9
History and Principles of Physical Education	3	Methods and Materials for Teaching Team Sports in Secondary Schools	4
Corrective Physical Education and Physical Examinations	3	Methods and Materials of Health Education	3
Techniques for Teaching Recreational Dance	1	Tests and Measurements in Physical Education	3
Methods and Practice in Teaching Physical Education Activities	4	Organization and Administration of Physical Education	3
Physiology	3	Academic teaching field	8-11
Academic teaching field	7		
Total	33	Total	33

Single-Major Teacher's Course

The minimum requirements for this degree are twenty-one credit hours in education, twenty-eight credit hours in physical education, three credit hours in physiology, and fourteen credit hours of electives:

JUNIOR YEAR	Credit Hours	SENIOR YEAR	Credit Hours
Learning and Teaching	6	Common Teaching Skills	3
Society and the School	6	Observation and Student Teaching	6-9
History and Principles of Physical Education	3	Corrective Physical Education and Physical Examinations	3
Techniques for Teaching Recreational Dance	1	Methods and Materials of Health Education	3
Leadership Organization in the Intramural Program	4	Tests and Measurements in Physical Education	3
Methods and Practice in Teaching Physical Education Activities	4	Organization and Administration of Physical Education	3
Methods and Materials for Teaching Team Sports in Secondary Schools	4	Electives	9 12
Physiology	3		
Electives	2	Total	33
Total	33		

Physical Education and Recreation Course

The minimum requirements for this course are 66 credit hours, distributed as follows:

JUNIOR YEAR		Credit Hours	SENIOR YEAR		Credit Hours
Learning and Teaching	3		Common Teaching Skills		3
Society and the School	6		Observation and Student Teaching		3
Introduction to Recreation	2		History and Principles of Physical Education		3
Techniques for Teaching Recreational Dance	1		Methods and Materials of Health Education		3
Leadership Organization in the Intramural Program	4		Tests and Measurements in Physical Education		3
Methods and Practice in Teaching Physical Education Activities ..	4		Organization and Administration of Physical Education		3
Camp Leadership	1		Community Organization for Recreation		3
Recreational Leadership Activities ..	6		Administration of Community Recreation Programs		3
Electives	6		Electives		3
Total	33		Total		33

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR WOMEN

There are three curricula leading to the degree. The Dual-Major Teacher's Course is designed to prepare students for positions in smaller schools where it is necessary to teach an academic subject in addition to Physical Education.

The Single-Major Teacher's Course prepares for the teaching of Physical Education in the larger schools. Within this course there is opportunity for specialization in dance, sports, or correctives.

The Physical Education and Recreation Course has been planned for those who wish to be prepared to direct programs of recreation in addition to teaching Physical Education.

The following courses, to be taken in the Junior College, are required for admission to the School of Education:

English	English 1, 2	6
Social Studies	English 51-52, 71-72, or 91-92	6
Science	History 39-40, 71-72; Political Science 9-10; or Sociology 1-2	6 or 8
Physical Education Curriculum	Biology 1-2 or Zoology 1-2	4
Requirements	Physical Education 43-44 (Freshman year)	4
Academic Electives .. (Each year)	Physical Education 49, 50, 51-52; Psychology 1, 22 (Sophomore year)	16
Total .....	.....	6 or 8

Dual- or Single-Major Teacher's Course

The student desiring to prepare herself to teach another subject in addition to Physical Education for Women may do so by choosing her elective hours from one subject-matter field with the advice of the Dean of the School of Education. Relevant work completed in the Junior College may be counted in this subject-matter field.

JUNIOR YEAR		SENIOR YEAR	
	Credit Hours		Credit Hours
Learning and Teaching	6	Society and the School	6
First Aid and Care of Athletic Injuries	2	Observation and Student Teaching	6-6
Physical Education in the Elementary School	3	Methods and Practice in Teaching Physical Education Activities	4
History and Principles of Physical Education	3	School and Community Health Programs	3
Corrective Physical Education and Physical Examinations	6	Methods and Materials of Health Education	3
Techniques for Teaching Recreational Dance	1	Tests and Measurements in Physical Education	3
Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges	2	Organization and Administration of Physical Education	3
Methods of Teaching Modern Dance	2	Electives	3-6
Camp Leadership	1	Total	34
Physiology	3		
Electives	3		
Total	32		

Physical Education and Recreation Course

JUNIOR YEAR		SENIOR YEAR	
	Credit Hours		Credit Hours
Introduction to Recreation	2	Society and the School	6
First Aid and Care of Athletic Injuries	2	Observation and Student Teaching	5-6
Physical Education in the Elementary School	3	History and Principles of Physical Education	3
Corrective Physical Education and Physical Examinations	6	Methods and Practice in Teaching Physical Education Activities	4
Techniques for Teaching Recreational Dance	1	Methods and Materials of Health Education	3
Leadership Organization in the Intramural Program	4	Camp Leadership	1
Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges	2	Organization and Administration of Physical Education	3
Methods of Teaching Modern Dance	2	Community Organization for Recreation	3
Recreational Leadership Activities	6	Administration of Community Recreation Programs	3
Physiology	3	Total	32-35
Elective	3		
Total	34		

PROGRAMS LEADING TO THE DEGREE OF BACHELOR OF ARTS IN EDUCATION

Programs leading to the degree of Bachelor of Arts in Education have four main objectives: (1) provision for a general educational background, (2) a functional command of ideas, concepts, knowledges, and skills in one or more teaching fields, (3) a mastery of basic professional information and skills adequate for a beginning teacher, and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of credit hours. None require less than 126 credit hours of satisfactory work, exclusive of required Physical Education. Normally, 60 credit hours of the total requirement are completed in the Junior College of the University or in an equivalent institution elsewhere.

GENERAL EDUCATION

The general educational backgrounds needed by prospective teachers are obtained through: (1) pre-college education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

College course requirements.—Course requirements depend in part upon the senior high school credits presented for college admission. They are as follows:

ENGLISH

- English 1, 2: English Composition
- Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A. English 1 is a prerequisite to all other courses in English.
- One of the following survey courses in literature
- English 51-52: Introduction to English Literature
- English 71-72: Introduction to American Literature
- English 91-92: Introduction to European Literature

FOREIGN LANGUAGES

French, German, Latin, Russian, or Spanish

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language. If he offers three units, he must complete the second term of the second-year college course in the same language. If he offers two units, he must complete the entire second-year college course in the same language. If he offers one unit, he must complete the second term of the first-year college course and the second-year course in the same language.

SOCIAL STUDIES

History 71-72: The Development of the Civilization of the United States	6
Another Social Science chosen from the following courses.....	6
Economics 1-2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
History 39-40: The Development of European Civilization	
Political Science 9-10: Government of the United States	
Religion 59-60: History of Religions	
Sociology 1-2: Introductory Sociology	
A student offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from the second part of this requirement.	

SCIENCE AND MATHEMATICS

Two terms of science or mathematics to supplement senior high school courses in these fields and chosen from the following.....	5-8
Biology 1-2: Survey in Biology	
Botany 1, 2: Structure and Functions of the Flowering Plant; Survey of the Plant Kingdom	
Chemistry 3-4: Survey of Physical Sciences	
Chemistry 11-12: General Chemistry	
Mathematics 3 and 6: College Algebra; Plane Trigonometry	
Mathematics 6 and 12: Plane Trigonometry; Analytic Geometry	
Physics 5 and 6, or 6 and 7: General Physics	
Zoology 1-2: Introduction to Zoology	

OTHER COURSES

Psychology 1: General Psychology	3
Psychology 22: Educational Psychology or	
Psychology 29: Child Psychology	3
Speech 1: Effective Speaking or	
Speech 11: Training of the Speaking Voice.....	3
Students who demonstrate marked superiority in Speech may be exempted from this requirement. Such exemption is granted only on the recommendation of the Department of Speech.	
Statistics 53: Introduction to Statistics in Psychology and Education	3

ACADEMIC ELECTIVES

Electives may be increased through the various exemptions

PHYSICAL EDUCATION

Physical Education 1-2 and 11-12	
A student may be exempted from this requirement if registered for less than three courses or regularly employed during the day.	

Minimum required credits.....

Work experience, leadership activities, participation in student campus activities, and the utilization of off-campus cultural opportunities.— Obviously, these cannot be prescribed. Nevertheless, they constitute an important part of the general educational background of prospective

* Required for those preparing for elementary school teaching

teachers. In conference with a staff member of the Department of Education assigned as his general adviser, the student is expected to plan adequate experiences in these areas. Not later than one month after matriculation in the School of Education the student must file in the Office of the Dean a statement of such plans approved by his adviser. He must also keep his adviser informed concerning the fulfillment of his plans and to this end include in plans filed, scheduled conferences with his adviser.

Success of the student in enriching his general educational background by these means will be taken into consideration at the end of the first term of the junior year when the faculty will review the qualifications of candidates to determine any who are not of sufficient promise as prospective teachers to warrant continuation of their candidacies. Success in these activities will also be considered when the list of candidates is again reviewed early in the last term of the senior year immediately after the results of the National Teacher Examinations are available. In estimating the success of the student in this connection, more weight will be given to evidence of initiative, eagerness to make the most of each experience, balance, and quality of experience than to the number of different experiences.

Although the student is not required to establish a program of non-academic activities until he becomes a degree candidate in the School of Education, he is advised to do so as soon as he enters the Junior College. To this end, he should consult with the Junior College adviser of students in the pre-Education curriculum soon after entering the Junior College. Whatever is accomplished in this connection while in the Junior College will reduce the obligations of the student after admission to the School of Education.

TEACHING-FIELD PREPARATION

Teaching-field preparation depends upon the kind of teaching position for which the student is preparing. Those planning to teach in elementary schools need a degree of competency in several fields. Those preparing to teach in junior or senior high schools must demonstrate competency in a major teaching field and a minor teaching field. Ordinarily, students preparing to teach in evening schools for adults are required to prove competency in only one teaching field.

The student should begin teaching-field preparation while in the Junior College and should make provision for it in planning his program of studies.

Teaching-field requirements include satisfactory completion of prescribed academic courses, a satisfactory score on the special field examination of the National Teacher Examinations, and satisfactory completion of the prescribed special methods course.

Prescribed academic courses vary in number in accordance with the scope and complexity of the teaching field and the license requirements of the various states. Minimum academic course requirements for each major teaching field are listed on succeeding pages. Minor teaching-field requirements are somewhat less than those of a major field. They are determined in conference with an adviser.

The prescribed course in special methods is concerned primarily with methods of initiating, guiding, and evaluating learning experiences dealing with the content of the teaching field. It attempts to bring to the student specific suggestions drawn from the accumulated experience of successful teachers. However, in addition, the course reviews the teaching-field content currently in use in schools and the examination at the end of the course provides the final test of competency in the teaching field.

Prescribed Courses in the Various Teaching Fields

ART		Credit Hours
One two-term course from the following group...		6
Art 121-22: World History of Art		
Art 151-52: Modern Art		
Art 161-62: History of Art Criticism		
Two term courses from the following group		6
Art 71-72: Introduction to the Arts in America		
Art 101-2: The Design of the Home		
Art 141-42: Interior Decoration		
Art 143: Folk Arts of America		
Additional courses from the following group		24
Art 65-66: Drawing and Painting—Life, Still Life, and Portrait		
Art 67-68: Drawing and Painting—Life and Portrait		
Art 75-76: Drawing and Painting—Life, Still Life, and Portrait		
Art 165-66: Drawing and Painting—Life and Portrait		
Art 175-76: Drawing and Painting—Life and Portrait		
Art 179-80: Sculpture		
Art 183-84: Commercial Art		
Education 113: Elementary School Art		3
Total		39

BIOLOGY		
Biology 1-2: Survey in Biology		6
Botany 1: Structure and Functions of the Flowering Plant		3
Home Economics 152: Nutrition		3
Physiology 115: Physiology		3
Zoology 1-2: Introduction to Zoology		8
Additional courses as approved by the Adviser		12
Education 144: Teaching Science		3
Total		38

BUSINESS EDUCATION

Accounting 1: Introductory Accounting 3
 Economics 1-2: Principles of Economics 3
 Secretarial Studies 51: Business Correspondence 3
 Additional courses as prescribed in one of the following groups:

Group 1—Secretarial Studies

Secretarial Studies 2: Intermediate Typewriting 3
 Secretarial Studies 12: Intermediate Shorthand and Transcription 3
 Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription 3
 Secretarial Studies 16: Secretarial Shorthand, Typewriting, and Transcription 3
 Secretarial Studies 54: Secretarial Practice 3
 Additional courses from the following as approved by the Adviser:
 Accounting 2: Introductory Accounting 3
 Business Administration 101: Business Organization and Communication 3
 Business Administration 109: Office Management 3
 Business Administration 141: Principles of Marketing 3
 Business Administration 151: Retailing 3
 Economics 121: Money and Banking 3
 Political Science 127: Commercial Law 3
 Statistics 52: Mathematics of Finance 3
 Education 150: Teaching Business Subjects 35

Total.....

Group 2—Bookkeeping, Business Arithmetic, and Business Law

Accounting 2: Introductory Accounting 3
 Business Administration 101: Business Organization and Communication 3
 Business Administration 102: Business Management 3
 Political Science 127-28: Commercial Law 3
 Statistics 52: Mathematics of Finance 3
 Two of the following courses, as approved by the Adviser:
 Accounting 111: Financial Statement Analysis 3
 Business Administration 121: General Insurance 3
 Business Administration 131: Business Finance 3
 Business Administration 138: Investments 3
 Economics 121: Money and Banking 3
 Education 150: Teaching Business Subjects 38

Total.....

Group 3—Distributive Education

Business Administration 141: Principles of Marketing 3
 Business Administration 142: Marketing Problems 3
 Business Administration 143: Sales Management 3
 Business Administration 151: Retailing 3
 Four of the following courses, as approved by the Adviser:
 Business Administration 144: Sales Management Problems 3
 Business Administration 147: Advertising 3
 Business Administration 150: Principles of Purchasing 3

Business Administration 158: Traffic Management	
Business Administration 175: Introduction to Foreign Trade	
Business Administration 176: Exporting and Importing	
Education 150: Teaching Business Subjects.....	2
Total.....	38

CHEMISTRY

Chemistry 11-12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis.....	4
Chemistry 22: Quantitative Inorganic Analysis.....	4
Chemistry 151-52: Organic Chemistry	8
Chemistry 191: History of Chemistry.....	2
One of the following	8-10
Chemistry 111-12 and 113-14: Physical Chemistry	
Biochemistry 221-22: Biochemistry	
Education 144: Teaching Science.....	3
Total.....	37-39

ELEMENTARY EDUCATION

Education 113: Elementary School Art.....	3
Education 114: Elementary School Music.....	3
Education 128: Children's Literature	3
Physical Education 1-1: Physical Education in the Elementary School	
Geography 51: Introduction to Geography.....	3
Geography 52: World Regions	3
Political Science 9-10: Government of the United States.....	6
Science as approved by the Adviser	2-14
Total	30-38

ENGLISH

English 1, 2: English Composition	6
English 52: Introduction to English Literature.....	3
English 71-72: Introduction to American Literature.....	6
English 125: The Evolution of Modern Speech	3
English 135-36: Shakespeare	6
Speech 11: Training the Speaking Voice.....	3
Three of the following term courses, with approval of Adviser.....	9
English 126: The Appreciation of Literature	
English 151-52: The Romantic Movement	
English 161-62: Victorian Literature	
English 165-66: The Twentieth Century	
English 171-72: Studies in American Literature	
English 173-74: Major American Poets	
English 176: American Drama	
English 177-78: American Fiction	
English 182: The English Novel	
English 199: Proseminar	
Education 136: Teaching English	3
Total.....	39

FRENCH

French 1-2: First-year French	6
French 3-4: Second-year French	6
French 9-10: French Conversation and Composition	0
French 51-52: Survey of French Literature and Civilization	12
Additional courses in French as approved by the Adviser	3
Education 146: Teaching Foreign Languages	39
Total	

GEOGRAPHY

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103-4: Cartography	6
Geography 113: Geomorphology	1
Geography 114: Weather and Climate	1
Geography 151: Economic Geography of the United States	1
Geography 152: Political Geography of the United States	1
Two of the following term courses	
Geography 183: Northwest Europe	
Geography 184: Mediterranean Region	
Geography 191: Middle America	
Geography 192: South America	
Geography 195: Eastern and Southeastern Asia	6
Geography 198: Australia and the Pacific	
Two of the following term courses	
Geography 125: Economic Geography: Trade and Transportation	
Geography 126: Economic Geography: Strategic Materials	
Geography 127: Economic Geography: Manufacture	
Geography 128: Economic Geography: Agriculture	
Geography 131: Conservation of Natural Resources	
Geography 132: Land Use	
Geography 141: Geography of Settlement	1
Geography 142: Urban Geography	
Education 138: Teaching the Social Studies	39
Total	

GERMAN

German 1-2: First-year German	6
German 3-4: Second-year German	6
German 51-52: Introduction to German Literature	0
Additional courses in German, as approved by the Adviser	12
Education 146: Teaching Foreign Languages	3
Total	39

HISTORY

History 39-40: The Development of European Civilization	6
History 71-72: The Development of the Civilization of the United States	6

Six credit hours, as approved by the Adviser, from each of the following groups

18

Group 1—American History

- History 171-72: Social History of the United States
History 173: Representative Americans
History 174: Economic History of the United States
History 181-82: Diplomatic History of the United States

Group 2—European History

- History 109: Thought and Culture of the Western World I: Ancient Civilization
History 110: Thought and Culture of the Western World II: The Middle Ages and the Renaissance
History 130: Nationalism
History 145-46: Russian History
History 147: Economic History of Europe
History 149-50: European Diplomatic History
History 151-52: English History

Group 3—Latin American History

- History 163: Latin American History—Colonial Period
History 164: South America since Independence
History 166: Mexico and the Caribbean since Independence
Political Science 175: International Politics in the Western Hemisphere
Political Science 176: Recent Trends in Latin American Politics and Government

Additional credit hours, as approved by the Adviser, from one of the foregoing groups

6

Education 138: Teaching the Social Studies

3

Total

39

MATHEMATICS

Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
Mathematics 123: Theory of Equations, or	
Mathematics 125: Advanced Algebra	3
Mathematics 132: Differential Equations, or	
Mathematics 139: Advanced Calculus	3
An additional course in Mathematics, as approved by the Adviser	3
Statistics 52: Mathematics of Finance	3
Education 140: Teaching Mathematics	3
Total	30

PHYSICS

Physics 5, 6, 7, and 8: General Physics	12
Physics 55: Physical Measurements	3
Physics 101: Mechanics	3
Physics 105: Principles of Electricity	3
Physics 106: Optics	3

Chemistry Elective—Chemistry 11-12: General Chemistry or	
Chemistry 12-21: General Chemistry and Qualitative Inorganic	8
Analysis	3
Mathematics 12: Analytic Geometry.....	3
Mathematics 19: Differential Calculus.....	1
Mathematics 20: Integral Calculus.....	6
Six credit hours to be selected from the following.....	
Physics 102: Heat and Thermodynamics	
Physics 113: Atomic Physics	
Physics 114: Statistical Physics	
Physics 128: Sound	
Physics 132: Electronics	
Physics 155-56: Advanced Physical Measurements	3
Education 144: Teaching Science.....	5
Total.....	

SOCIAL STUDIES

History 39-40: The Development of European Civilization.....	6
History 71-72: The Development of the Civilization of the United	6
States	6
Political Science 9-10: Government of the United States.....	12
Two of the following courses.....	
Economics 1-2: Principles of Economics	
Geography 51, 52: Introduction to Geography and World Regions	
Religion 59-60: History of Religions	
Sociology 1-2: Introductory Sociology	
Additional second group courses, as approved by the Adviser, from one	12
of the following fields: Economics, Geography, History, Political	3
Science, Religion, Sociology	
Education 138: Teaching Social Studies.....	45
Total.....	

SPANISH

Spanish 1-2: First-year Spanish.....	6
Spanish 3-4: Second-year Spanish.....	6
Spanish 9-10: Spanish Conversation and Composition.....	12
Additional courses, as approved by the Adviser.....	3
Education 146: Teaching Foreign Languages.....	39
Total.....	

SPEECH

Speech 1: Effective Speaking.....	3
Speech 2: Persuasive Speaking	3
Speech 11: Training the Speaking Voice.....	3
Speech 32: Oral Reading.....	3
Speech 101: Voice and Phonetics.....	1
Speech 131: Group Discussion and Conference Leadership.....	3
Speech 153: Play Production.....	3
Speech 175: Speech Correction.....	3
Education 136: Teaching English.....	

One of the following areas of specialization, as approved by the Adviser:

Group 1—Speech Arts

Twelve credit hours to be chosen from the following..... 12

Speech 142: Oral Interpretation of Literature

Speech 136: Public Discussion and Debate

Speech 154: Play Production

Speech 166: History of the Theater

Speech 169: Creative Dramatics and Children's Theater

Group 2—Speech Correction

Twelve credit hours to be chosen from the following..... 12

Speech 170: Speech Correction

Speech 177-79: Clinical Practice in Speech Therapy

Speech 181: Introductory to Hearing Problems

Speech 183-84: Clinical Practice in Hearing Therapy

Additional courses in English, Physiology, Psychology, or

Speech, as approved by the Adviser

Total..... 39

PROFESSIONAL EDUCATION

The basic professional information and skills needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses

Education 109-10: Learning and Teaching.....	6
*Education 111-12: Elementary School Curriculum.....	6
Education 121-22: Society and the School.....	6
†Education 131: Common Teaching Skills.....	3
†Education 133-34: Observation and Student Teaching.....	2-6
†Education 136 to 150: Special Methods.....	2-6
Total.....	24-27

Learning and Teaching.—Candidates enrolled in four-year programs leading to the degree of Bachelor of Arts take this course in the junior year. Those enrolled in five-year programs take it in the senior year.

The course attempts to promote a functional understanding of the nature of learning and teaching—characteristics of learning and principles of teaching are presented and discussed in the two one-hour class meetings each week. At least an equal amount of time is spent in observation and study of the application of these characteristics and principles to classroom situations. Class discussion normally revolves around these field experiences.

* Not required of those preparing for secondary school teaching.

† Not required of those preparing for elementary school teaching.

The course is also intended to provide the student with exploratory experiences of assistance to him in deciding whether to choose the profession of teaching. The student's performance in connection with the course is one of the factors considered when the Faculty reviews the list of candidates who have completed the first term of the junior year (senior year for those enrolled in five-year programs).

Society and the School.—This course is also taken in the junior year by candidates enrolled in four-year programs (senior year by those in five-year programs).

The first term of the course attempts to promote an understanding and appreciation of the role of schools in the sound promotion of the enduring interests of our democratic society. More particularly, it attempts to develop a functional understanding of the contributions of all social agencies in the education of people and of desirable cooperative working relations that help the school to play its part as a member of the institutional "team" of the community.

The second term of the course is concerned with study of the school as a whole—its purposes, program of studies, out-of-class activities, general organization, and major instructional problems. Although schools at all levels are studied, students give particular attention to schools at the level within which they are preparing to teach.

During both terms of this course classes meet for lecture and discussion two hours a week. At least an equal amount of time is spent in field study. During the first term each student studies cooperating social institutions. In the second term extended study of schools at the level of the student's special interest is supplemented by briefer studies of schools at other levels. Class discussion is largely determined by field experiences.

This course is also intended to provide the student with exploratory experiences of guidance value. The performance of the student in the first term of the course is also given careful consideration by the Faculty in its review of the list of candidates at the beginning of the second term of the junior year (senior year for those enrolled in five-year programs).

Common Teaching Skills.—Those enrolled in four-year programs take this course in the senior year. Those enrolled in five-year programs take it in the fifth year.

The course is concerned with the skills needed by teachers in connection with classroom management, teaching techniques, homeroom procedures, administrative routines, activity sponsorship, group planning, and public relations.

Classes meet three hours a week for lecture, discussion, and laboratory. The observation of classroom teaching done in connection with the Observation Course (Education 133), for which students are normally enrolled concurrently, provides the field work of the course.

Special Methods Courses.—Associated with each teaching field is a course dealing with its special teaching problems. In addition to the study of practices followed by successful teachers, actual teaching content as found in current texts and courses of study is reviewed. Needed content, not included in academic courses available for teaching-field preparation, is taught in these courses.

Observation and Student Teaching.—This course is taken in the senior year by students enrolled in four-year programs (in the fifth year by those in five-year programs).

It begins with the observation of classroom teaching in selected situations. Assumption of responsibility for teaching functions is gradual, leading eventually to practice in the complete direction of classroom activities. Those preparing to teach in secondary schools have the opportunity of observing and doing practice teaching in both major and minor teaching fields on the senior high school level. The course is directed by full-time members of the faculty of the School of Education. The work of each student is under the direct supervision of a critic teacher, selected because of unusual success in teaching, ability to supervise, and broad understanding of educational problems. Critic teachers are part-time members of the instructional staff of the School. Observation and teaching are done in the public schools of the metropolitan area of Washington, assuring practice in situations comparable to those the student is likely to face on becoming a teacher.

ADMISSION

To be admitted to candidacy for the degree of Bachelor of Arts in Education, the applicant must: (1) hold an Associate in Arts degree based on the Education Curriculum in the Junior College or the equivalent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent; (2) have a quality-point index of 2.00 (average grade of C) counting "Incomplete" grades as "F"; (3) have demonstrated a genuine interest in teaching and possess personality traits that give promise of success as a teacher; and (4) have an interview in the Office of the School of Education.

FIVE-YEAR PROGRAMS LEADING TO THE DEGREES OF BACHELOR OF ARTS AND MASTER OF ARTS IN EDUCATION

Five-year programs are designed: (1) to permit more adequate teaching-field and professional preparation, (2) to prepare for special teaching positions, and (3) to meet teaching-certificate requirements based upon five years of preparation.

Students in these programs usually devote the junior year to additional teaching-field preparation and general education. Ordinarily,

teaching-field preparation is continued in the senior year and the first two professional courses (Education 109-10, 121-22) are taken. The work of the fifth year includes the remaining undergraduate professional courses and the balance of graduate courses needed to meet the requirements of the degree of Master of Arts.

Candidates must have a quality-point index of at least 2.50 before beginning the work of the senior year. As much as 18 credit hours of the work of the senior year may be taken for graduate credit. Observation and Student Teaching, taken in the fifth year, may not be taken for graduate credit.

Candidates enrolled in five-year programs are able to prepare more adequately in their major or minor teaching fields, or in both. Additional teaching-field courses must be approved by the Adviser in the teaching field concerned.

The five-year plan of study also provides an opportunity for candidates to prepare to teach "common learnings" courses in one or more of the various core curriculum plans now being adopted in many secondary schools. Such programs need to be carefully planned to meet the demands of the situation in which the candidate hopes to teach.

A number of cities and some states require five years of satisfactory preparation before issuing certain teaching certificates. Candidates seeking such certificates should familiarize themselves with the requirements of the community or state concerned and plan their programs accordingly.

Five-year programs must meet all the requirements of the degrees of Bachelor of Arts and Master of Arts in Education, and must be approved by the Adviser designated for these programs.

PROGRAMS LEADING TO THE DEGREE OF MASTER OF ARTS IN EDUCATION

Programs of study leading to the degree of Master of Arts are designed: (1) to enable teachers of experience to increase their knowledge of professional and academic information and skills, (2) to prepare for special types of educational service, and (3) to provide opportunities for graduates of liberal arts colleges to acquire needed professional education.

Programs are planned in conference with the designated Adviser and take into consideration the interests of the candidate, his previous background, and the certification requirements of the state and locality in which he plans to teach.

PLANS OF STUDY

Two general plans of study lead to the degree.

Plan 1.—This plan requires a minimum of 30 hours of graduate credit, including a thesis carrying 6 hours of graduate credit.

Plan 2.—This plan requires a minimum of 33 hours of graduate credit, including a course in *Educational Research Methods and Procedures* carrying 3 hours of graduate credit.

Graduate work completed in other accredited institutions of learning may be credited toward the Master's degree, but a minimum of 30 credit hours must be completed in the School of Education of The George Washington University. Not more than nine credit hours of the minimum thirty-hour requirement may be taken in off-campus courses.

Advanced courses completed in excess of the requirements for the Bachelor's degree in this University may be credited toward the Master's degree to the extent of 12 credit hours, provided the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

In determining advanced standing at the time of admission or re-admission to Master's candidacy at this University, graduate work completed more than three years previously is not counted.

Under Plan 1, a minimum of 12 credit hours, in addition to the thesis, must be from courses planned primarily for graduate students (third-group courses). Under Plan 2, a minimum of 18 credit hours, in addition to the course in *Educational Research Methods and Procedures*, must be from third-group courses. Under either plan a minimum of 12 credit hours, not including the thesis or the research course, must be from courses offered in the Department of Education.

Programs may provide for additional academic preparation in one or more teaching fields. In such cases, however, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education in the teaching field concerned.

Programs are normally based upon undergraduate preparation equivalent to the requirements of the degree of Bachelor of Arts in Education (see pages 12-13). Candidates with less professional preparation must make up their deficiencies either prerequisite to or as part of their graduate study.

Each candidate must file in the Office of the Dean not later than one month after admission to the School of Education a program of study approved by his Adviser.

COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a professional comprehensive examination in two parts: (1) a general examination concerned with an integrated understanding of the major areas in professional education, and (2) a special examination concerned with the candidate's area of specialization.

The general part of the comprehensive examination is divided into

three groups as follows: Group I (Foundations) covers learning and teaching, society and the school, child growth and development, history of education, philosophy of education, and educational research; Group II (Major Levels) covers elementary education, secondary education, adult education, employee training, vocational education, and physical education; Group III (Common Elements) covers administration, curriculum, evaluation, guidance, methodology, and reading.

The candidate must be prepared to answer two questions in each group, none of which shall include his area of specialization.

PROGRAMS OF STUDY

School Administration—Secondary School Principalship or Elementary School Principalship

Programs of those interested in the position of principal customarily include The American School System, The Teacher in School Supervision, and either Secondary School Management or Administration of Elementary Education. Additional courses are chosen as needed from Adult Education, Curriculum, Elementary Education, Guidance, Public Relations, School Finance, School Law, School Plant Planning, and Secondary Education.

Adult Education

Programs of those particularly interested in the education of adults may or may not include additional teaching-field preparation. In addition to six credit hours of work in Adult Education professional courses may be chosen from Audio-visual Education, Curriculum, Employee Training, Evaluation, Guidance, History of Education, Mental Hygiene, and Philosophy of Education.

Secondary Education—Senior or Junior High School

Those who desire additional teaching-field preparation may combine advanced subject-matter courses in an academic field with professional courses. Programs usually include six credit hours of work in Secondary Education with additional courses chosen from Audio-visual Education, Curriculum, Extra-classroom Activities, Guidance in Secondary Schools, Philosophy of Education, Research, and Vocational Education.

Elementary Education—Intermediate Grade or Early Childhood Education

Programs customarily include either Elementary Education or Early Childhood Education with additional courses chosen from Child Growth

and Development, Children's Literature, Curriculum, Evaluation, History of Education, Mental Hygiene, Philosophy of Education, Reading Problems, and Speech Correction.

Agricultural Extension Education

These programs are designed for those with successful experience in agricultural extension education. Six or more credit hours of work are devoted to agricultural extension education, by special arrangement with the Extension Service of the United States Department of Agriculture. The remainder of the program is planned in accordance with the interests and needs of the candidate and usually includes courses in Supervision, Adult Education, and Secondary Education. Courses in Administration, Curriculum, Evaluation, Group Leadership, Guidance, Personnel Psychology, Research, Speech, and Statistics may also be chosen.

Curriculum

Programs of those interested in specializing in curriculum development include six credit hours of work in Curriculum with additional courses chosen from Adult Education, Audio-visual Education, Child Growth and Development, Course of Study Construction, Elementary Education, Evaluation, Extra-classroom Activities, and Secondary Education.

Employee Training

Programs for those interested in the training of employees in business, industry, and government normally include courses in Employee Training and Adult Education. Additional courses are chosen from Audio-visual Education, Curriculum, Guidance, Mental Hygiene, Personnel Psychology, Philosophy of Education, Public Relations, and Techniques of Counseling.

Guidance

Programs for those especially interested in guidance usually include courses in Educational and Vocational Guidance, Techniques of Counseling, Guidance in Secondary Schools, and Occupational and Educational Information. Additional Courses frequently chosen include Adult Education, Curriculum, Employee Training, Evaluation, Individual Psychological Testing, Personnel Psychology, Philosophy of Education, Psychological Tests, Secondary Education, and Test Construction.

ADMISSION

To be admitted to candidacy for the degree of Master of Arts in Education the applicant must: (1) hold a Bachelor's degree from an

accredited institution; (2) have an undergraduate quality-point index of 2.50 or above (C + average); (3) have demonstrated a genuine interest in teaching; (4) be in possession of personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are prerequisite. Candidates who have had no professional courses must satisfactorily complete the required undergraduate professional courses, including Observation and Student Teaching, in addition to graduate course requirements.

PROGRAM LEADING TO THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education cannot be stated in credit hours, but they consist in general of at least two full years of work beyond the degree of Master of Arts in Education or the equivalent. The programs of study are designed to prepare students for administrative or supervisory positions, the teaching of education in normal schools or colleges, the teaching of an academic subject in schools or colleges, or for specialized types of educational service. The work is given a practical rather than a theoretical bent, and emphasizes the mastery and application of subject matter, both in the study requirements and in the dissertation. Special emphasis is placed upon the professional success of the candidate.

The candidate's program of study depends for the most part upon his previous educational background and his professional objective. Opportunities are provided for study leading to the following professional objectives:

School Superintendent
Secondary School Principal
Elementary School Principal
Supervisor

Director of Guidance
Director of Curriculum Development
Professor of Education
Specialist in Educational Research

QUALIFICATIONS OF THE APPLICANT

The candidate for the degree of Doctor of Education must have completed (1) graduate work in fields prerequisite to his objective, equivalent to that required for the degree of Master of Arts in Education in The George Washington University, and (2) at least three years of successful educational experience.

ADMISSION TO CANDIDACY

To be admitted to candidacy for the degree the applicant must be accepted by the Faculty of the School of Education on the basis of an

examination conducted by a committee appointed by the Dean. This examination will usually include the following: (1) a written examination involving problems related to the applicant's background; (2) a scholastic-aptitude test; (3) an oral examination.

CONSULTATIVE COMMITTEE

If the applicant is accepted as a candidate, his consultative committee, in cooperation with the candidate, will (1) determine the candidate's fields of study, in each of which the candidate must pass a written examination at least eight months before he presents himself for the degree; (2) formulate a list of course requirements and of readings that will assist him in preparing for these examinations; and (3) designate the tools of investigation that will be needed by the candidate in the prosecution of his study. These tools may include one foreign language, or more, statistical methods, historical criticism, or any others considered essential by the committee. An examination in the tools designated must be passed by the candidate before he takes his comprehensive examination.

THE DISSERTATION

When the candidate has satisfied the requirements of his consultative committee, the committee is dissolved. A member of the faculty, in whose field the topic of the dissertation falls, is then appointed to serve as the candidate's adviser on his dissertation and in his field of specialization, and to recommend him to the Dean for the final oral examination when, in his judgment, the candidate's dissertation is acceptable.

Not later than the date specified in the University calendar the candidate shall submit to the Dean of the School of Education three copies of his dissertation—one typewritten original and two legible and complete carbon copies, on official thesis paper—and also a typewritten summary of the dissertation consisting of not more than 2,500 words. Requirements regarding the form of the dissertation are stated in the general catalogue and additional information will be supplied by the Dean.

The successful candidate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE FINAL EXAMINATION

At least three weeks before the degree is to be conferred the candidate must pass an oral examination on his dissertation and on his field of specialization before a committee of the Faculty appointed by the Dean, supplemented by two experts from outside the University appointed by the President. This examination is open to the public and

all are privileged to question the candidate. The Dean, or a member of the Faculty designated by him, will preside at this examination.

READING CLINIC

To help children and adults with reading difficulties the University operates a diagnostic and corrective reading clinic. Children may be referred by principals, teachers, or parents. Adults may apply by telephone.

To arrange for a clinical examination of reading status, address The George Washington University Reading Clinic, 802 Twenty-first Street, NW., or telephone NAtional 8-5200, Extension 491, for an appointment. The Clinic is open for appointments Monday through Friday, from 9:00 A.M. to 5:00 P.M.

A complete diagnostic examination usually requires the greater part of a day. When completed, a written report is given and a conference arranged at which disabilities are discussed in detail and suggestions for corrective work are outlined. The fee is \$25.

REGULATIONS

Students in the School of Education are subject to, and are expected to familiarize themselves with, the general University regulations stated in the University catalogue.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University.

A student who has previously matriculated in the University, but who has not been in attendance during the term prior to registration, should file an application for readmission in advance of registration.

Registration is for the term unless otherwise indicated on the registration paper. No registration is accepted for less than a term or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the Dean. Allowance of credit for work done concurrently will be at the discretion of the Committee on Admission and Advanced Standing.

AMOUNT OF WORK

A normal program of work for an undergraduate student is fifteen credit hours. A student with a quality-point index of 3.00 or higher may, with the Dean's permission, take eighteen hours. More than eighteen hours may not be taken except by special permission of the Committee on Scholarship.

For an employed student six or seven credit hours constitute a normal program. A student with a quality-point index of 3.00 or higher for the preceding term may be permitted by the Dean to take nine or ten credit hours.

For a graduate student fifteen or sixteen credit hours constitute a normal program. For an employed student six or seven credit hours constitute a normal program. If scholarship is sufficiently high, or the nature of employment unusual, the Dean may permit registration for additional credit hours.

A student carrying a full-time program may not be employed part-time for more than fifteen hours a week without permission of the Dean.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

SUSPENSION

An undergraduate student who fails to pass in half or more than half of his work, based on a minimum of sixteen credit hours, will be suspended.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

A student who has been suspended for poor scholarship may within ten days appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student appears likely to improve in his scholarship thereafter, the Committee may readmit him on probation. A student who has been denied readmission on probation may petition the Committee on Scholarship through the Dean for readmission after the lapse of a calendar year. A student who has been suspended twice will not be readmitted.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who has not a clear financial record.

Withdrawal between October 31 and the end of the fall term and between February 28 and the end of the spring term is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CHANGES IN PROGRAM OF STUDIES

Changes within the School.—A student may not change or drop courses (see "Withdrawals", above) or change his status to that of auditor except with the approval of the Dean, upon presentation of adequate reasons for such changes.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the Dean. All requirements specified in the course of study to which the change is made must be satisfied before graduation.

Transfers within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Application for transfer must be made to the Director of Admissions on the proper form provided by his office.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various schools and colleges have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations regarding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements and to note that in all undergraduate divisions 30 credit hours, including *at least 12 credit hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly all the requirements he must fulfill.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the Dean. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last term of the senior or final year.

Scholarship.—The undergraduate student must maintain a quality-point index of at least 2.00.

The graduate student must maintain a quality-point index of 3.00.

Residence.—A minimum of one year, or thirty credit hours, including at least twelve credit hours in the major field, must be completed in residence. Not more than nine credit hours of the residence requirement may be satisfied by off-campus courses. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

With the permission of the Dean a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each term he is absent. For the purpose of this regulation, the summer sessions will not be considered a term.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

Library books, with the exception of those in the Law and Medical collections, may be drawn for home use for a period of two weeks. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books and periodicals for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

HOURS

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted:

TUITION FEES

For each credit hour for which the student registers (except work taken by a candidate for a Doctor's degree)	\$15.00
For the degree of Doctor of Education	450.00
For work* leading to and including the general examination	450.00
For working leading to and including the final examination	450.00

* This fee does not cover the cost of tuition for elementary courses (numbered 1-100).

ADDITIONAL COURSE FEES

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the term and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEE	20.00
FEE FOR BINDING MASTER'S THESIS	5.00
FEE FOR PRINTING AND FILING SUMMARY OF DOCTORAL DISSERTATION	75.00
SPECIAL FEES	
Application fee, charged each applicant for admission, non-refundable	3.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees")	1.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any term of absence from the University or after completion of tuition requirements	15.00
For special physical examination	2.00
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry courses who fails to check out of the laboratory by the time set by the instructor	2.00
Transcript fee, charged for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described in the General Catalogue. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each term are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for term charges, except for fees payable in advance, permitting payments as follows:

Fall Term.—One third at the time of registration; one third on November 3; one third on December 3.

Spring Term.—One third at the time of registration; one third on March 3; one third on April 3.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of \$1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of \$5.

A student suspended for failure to meet payments when due may not be reinstated for the term after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Term.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Term.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of \$5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the term for which a registration charge is incurred and in no case will this payment be credited to another term.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of \$2. A student who drops a course before the end of the term must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

COURSES OF INSTRUCTION

The University reserves the right to withdraw any course announced.

EXPLANATION OF COURSE NUMBERS

An odd number preceding the name of the course indicates that the course is offered in the fall term; and an even number, that it is offered in the spring term. The letter "x" following an odd course number (e.g., 295x) indicates that the course, normally offered in the fall term, is given in the spring term. The letter "x" following an even course number indicates that the course, normally offered in the spring term, is given in the fall term.

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the Adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the Dean of the School of Education and by the officer of instruction concerned, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors.

INDICATION OF THE AMOUNT OF CREDIT

The number of credit hours given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each term is marked (3-3), and a term course giving three hours of credit is marked (3).

DEPARTMENT OF EDUCATION

Courses offered by the Department of Education are of two types: those designed for the preservice education of candidates and those planned for the inservice education of teachers.

Preservice courses devote two fifty-minute periods a week to lecture and discussion supplemented by a minimum of two hours a week of related field work. A clinical approach to the study of educational

problems is used, lectures and discussions revolving around observed practices.

Inservice courses usually meet only once a week for a two-hour period. Class work is supplemented by extensive reading assignments, the preparation of reports, and field work. A student enrolled in one of these courses should plan to devote not less than seven hours a week, exclusive of class time, to the work of the course.

Ample opportunity is provided to study teaching or administrative problems of special interest. To enable students to consult with instructors regarding individual problems, a conference hour is scheduled immediately before or after the class period.

Only the courses designed to provide professional information and skills are listed below. For courses needed for general education or teaching-field preparation, see the general catalogue. In addition to courses offered in the Department of Education a number of professional courses for teachers are offered in the departments of Psychology, Speech, and Statistics. These are listed below together with courses offered by the Department of Education.

Whenever possible, the exact hour of class meeting is stated. Hours for classes not yet scheduled may be found in the Schedule of Classes for the term concerned.

FIRST GROUP

Education A Reading Clinic Coleman and Staff
Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for diagnosis, \$25; for individual lesson, \$3.50; for group lesson, \$2.50; material fee, \$1.

Psychology 22 Introduction to Educational Psychology (3)
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. Morning.
Psychology 22x, same as 22, offered fall term. Tues. and Thurs., 6:10 to 7:25 P.M.

Psychology 29 Child Psychology (3) E. Johnson
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. Mon. and Wed., 5:45; 7:00 P.M.
Psychology 29x, same as 29, offered spring term. Morning.

Statistics 53 Introduction to Statistics in Psychology and Education (3) The Staff
Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, profiles, norms and their use, frequency distributions, intelligence and other quotients, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in algebra. Labor-

atory fee, \$6. Lecture—section A: Tues. and Thurs., 10:10 A.M.; section B: Mon. and Wed., 7:35 to 8:25 P.M.; laboratory—section M: Thurs., 2:10 to 3:50 P.M.; section N: Tues., 4:10 to 5:50 P.M.; section P: Mon., 8:30 to 10:10 P.M.

Statistics 53x, same as 53, offered spring term. Evening.

SECOND GROUP

Statistics 105x *Statistics in Psychology and Education* The Staff

(3)

Advanced study of correlation and frequency analysis, sampling theory, factor analysis, and applications to specific problems utilizing case method of study in so far as possible. Original work is required of each student. Prerequisite: Statistics 53. Laboratory fee, \$6. Evening.

Education 109-10 *Learning and Teaching* (3-3) Ruffner

For the general student as well as the prospective teacher. Fall term: nature of learning approached through the study of actual classroom situations. Spring term: nature of teaching approached through observation of typical classroom situations. Section A: Mon., 1:15-3:00 P.M.; field work to be arranged; section B: Wed., 6:10 to 8:00 P.M.; field work to be arranged.

Education 111-12 *Elementary School Curriculum* (3-3) LaBue

For seniors in the elementary school curriculum. Principles of elementary education, including general classroom procedures and common teaching skills. Fall term: special emphasis upon materials and methods in language arts, including reading, writing, spelling, and speech. Spring term: special emphasis upon materials and methods in social studies, science, and arithmetic. Prerequisite: Education 109-10 and 121-22. Mon. and Wed., 4:30-5:45 P.M.

Education 113 *Elementary School Art* (3) Nowlin

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Thurs., 7:10 to 9:10 P.M.; field work to be arranged.

Education 114 *Elementary School Music* (3) Reed

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Fri., 7:10 to 9:10 P.M.

Education 115 *Elementary School Classroom Procedures* (3)

For experienced teachers. Survey of current classroom practices with particular attention to the determination of children's needs and interests, providing for individual differences; evaluation. (Not offered in 1954-55.)

Education 116 *Elementary School Social Studies* (3)

For experienced teachers. Content and methods of teaching. (Not offered in 1954-55.)

Education 117 *Elementary School Science* (3)

For experienced teachers. Materials and methods. (Not offered 1954-55.)

Education 120 *Elementary School Arithmetic* (3) Woodson

For experienced teachers. Content, materials, and methods. (Not offered in 1954-55.)

Education 121-22 Society and the School (3-3) Angel
For the general student as well as the prospective teacher. Fall term: the local, national, and international roles of education; cooperation of the school with other community agencies. Spring term: organization and operation of schools; principles and functions. Section A: Wed., 1:10 to 3:00 P.M.; field work to be arranged; section B: Mon., 6:10 to 8:00 P.M.; field work to be arranged.

Psychology 121 Educational Psychology (3)
Advanced course in educational psychology. Open each term on the individual study plan to a limited number of students. Time to be arranged.

Education 128 Children's Literature (3) Walker
For juniors in the elementary school curriculum. Exploring and evaluating the newer books for children and the children's classics, understanding the contributions of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 29. Tues., 7:35 to 9:35 P.M.; field work (2 hours)—to be arranged.

Psychology 129 Introduction to Counseling and Guidance (3) Dreese
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. Thurs., 6:10 to 8:50 P.M.

Education 131 Common Teaching Skills (3) Root
For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, discipline, the homeroom, activity sponsorship, public relations. Prerequisite: Education 109-10 and 121-22. Tues. and Thurs., 12:45 to 2:00 P.M.

Psychology 131 Psychological Tests (3) Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$5. Tues. and Thurs., 11:10 A.M. to 12:25 P.M.
Psychology 131x, same as 131, offered spring term. Evening.

†Education 133-34 Observation and Student Teaching (3-3 to 6) Root, LaBue
For seniors in the elementary or secondary school curriculum. Education 134, student-teaching fee, \$30. Admission by permission of the instructor. Prerequisite: Education 109-10 and 121-22. Time to be arranged individually.

Psychology 141 Leadership, Group Behavior, and Student Life (3) Faith
Lectures and class discussions of the techniques of leadership, the dynamics of group behavior, and the interrelations between the student and his university. Mon., Wed., and Fri., 11:10 A.M.

† A dagger preceding an odd numbered course indicates that it is the first half of a full-year course, the second half of which must be completed before credit is allowed.

Psychology 144 *Personnel Psychology* (3)

The application of psychology to personnel work in education, business, industry, and government. Mon., Wed., and Fri., 10:10 A.M.

Psychology 144X, same as 144, offered fall term. Tues. and Thurs., 7:35 to 8:50 P.M.

SPECIAL METHODS COURSES*

To be elected in the senior year after substantial preparation in the teaching fields concerned, by students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

Education 136 *Teaching English* (2 to 4)

Prerequisite*: Eighteen credit hours of English. Mon., 7:10 to 9:10 P.M. field work (2 hours) to be arranged. Lumsden

Education 138 *Teaching Social Studies* (2 to 4)

Prerequisite*: Twenty-four credit hours of social studies. Thurs., 7:35 to 9:35 P.M.; field work (2 hours) to be arranged. Root

Education 140 *Teaching Mathematics* (3)

Prerequisite*: Mathematics through calculus. Tues., 5:10 to 7:00 P.M. Weida

Education 144 *Teaching Science* (2 to 4)

Prerequisite*: Twenty-four to forty credit hours of science. Thurs., 5:10 to 7:00 P.M.; field work (2 hours) to be arranged. Rumbough

Education 146 *Teaching Foreign Languages*

(2 to 4)

Prerequisite*: Eighteen credit hours of one foreign language. Tues., 5:10 to 7:00 P.M. Doyle, Keating

Education 148 *Teaching Home Economics* (2)

Prerequisite*: Thirty credit hours of Home Economics. Time to be arranged. Kirkpatrick

Education 150 *Teaching Business Subjects* (2)

Prerequisite*: Thirty credit hours of business education. Time to be arranged. Shott

Psychology 171 *Psychology of Personality* (3)

Contemporary approaches to the study of personality. Prerequisite: 12 credits in psychology, including Abnormal Psychology. Mon. and Fri., 11:10 A.M. to 12:25 P.M. Caldwell

Speech 175-76 *Speech Correction* (3-3)

A study of the causes of the disorders of speech with emphasis on methods in diagnosis and treatment of defective speech. Admission by permission of the instructor. Laboratory fee, \$5 a term. Speech 175: Tues. and Thurs., 7:35 to 8:50 P.M. Pettit

* Prerequisite to all special methods courses. Education 109-10, 121-23, and 131. Additional prerequisites are stated under each course.

THIRD GROUP*

- Education 205-6 *The Curriculum*† (3) Bish
For experienced teachers. Fall term: curriculum foundations and issues; comparison of curriculum patterns. Spring term: principles and procedures in curriculum development; group consideration of student problems. Sat., 11:10 A.M. to 1:00 P.M.
- Education 207 *Curriculum Materials*† (3)
For experienced teachers. The study and construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to student's own situation. (Not offered in 1954-55.)
- Education 209-10 *Child Growth and Development*† (3-3) La Bue
Basic factors in human growth and development and their relation to learning and teaching. Related practical experience in studying children; class analyses of procedures and results. Sat., 9:10 to 11:00 A.M.
- Education 212 *Evaluation in Education*† (3) Ruffner
Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation. Thurs., 7:35 to 9:35 P.M.
- Education 213-14 *History of Education* (3-3) Jarman
Fall term: the European backgrounds of American education. Spring term: the evolution of the American school system. Tues., 7:35 to 9:35 P.M.
- Education 215 *Education of the Exceptional*† (3) La Bue
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnoses, therapy, education, and guidance. Fri., 7:10 to 9:10 P.M.
- Education 217-18 *Contemporary Problems in Education*† (3-3) Jarman
Fall term: designed to help students formulate a personal philosophy of education. Spring term: social foundations of education—a study of the forces that shape the policies and offerings of the school. Mon., 7:10 to 9:10 P.M.
- Education 219 *Recent Developments in Elementary Education*† (3)
For experienced teachers. New areas of emphasis, changing techniques of working with children, curriculum trends, review of recent literature. (Not offered in 1954-55.)

* A degree from an accredited institution is prerequisite to all third-group courses.
† Prerequisite: adequate professional preparation.

Education 220 *Intermediate Grade Education* * (3)

A study of the curriculum and methods of teaching in the intermediate grades, based upon a growing understanding of the child and his environment. (Not offered in 1954-55.)

Education 221-22 *Early Childhood Education* * (3-3)

For experienced teachers. Fall term: nursery school and kindergarten education. Spring term: education in the primary grades. (Not offered in 1954-55.)

Psychology 223 *Seminar: Learning* (3)

Covers theories of learning. Wed., 8:10 to 10:00 P.M.

B. H. Fox

Education 223-24 *Reading Problems* * (3-3)

For experienced teachers. A clinical approach to reading difficulties on elementary and secondary school levels. Demonstrations and observations, with clinic cases. Wed., 7:10 to 9:10 P.M.

Coleman

Education 225 *Elementary School Reading* (3)

For experienced teachers. Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic. (Not offered in 1954-55.)

Coleman

Psychology 225 *Seminar: Mental Hygiene* (3)

A study of mental health problems with special attention to programs of prevention. Tues., 6:10 to 8:00 P.M.

Caldwell

Education 227-28 *Elementary Education* * (3-3)

For experienced teachers. Fall term: elementary school programs, objectives, common characteristics, and major issues. Spring term: current methods and materials in teaching the several instructional areas and the curriculum. Thurs., 7:35 to 9:35 P.M.

LaBue

Psychology 227x *Seminar: Counseling and Guidance* (3)

Recent developments and current problems in vocational, educational, and personal guidance in various types of agencies with particular reference to education. Prerequisite: educational or psychological measurements and Psychology 129 or the equivalent. Thurs., 7:35 to 8:35 P.M.

Dreese

Psychology 228 *Seminar: Techniques of Counseling* (3)

Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods. Mon., 8:10 to 10:00 P.M.

Dreese

Psychology 229x *Seminar: Occupational and Educational Information* (3)

Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. Tues., 8:10 to 10:00 P.M.

Faith

* Prerequisite: adequate professional preparation.

Education 231 Secondary School Classroom

Bish

Procedures * (3)

Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. Thurs., 7:35 to 9:35 P.M.

Psychology 231 Test Construction (3)

Hunt

The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and a course in statistics. Thurs., 8:10 to 10:00 P.M.

Psychology 232 Research: Test Construction (3)

Hunt

Individual projects in construction and evaluation of psychological, educational, or vocational tests. Prerequisite: Psychology 231. Open each term on an individual study plan to a small number of students by permission of the instructor. Time to be arranged.

Education 233x Audio-visual Education * (3)

J. Johnson

Selection and use of audio-visual aids; management of materials and equipment. Material fee, \$5. Lecture—Sat., 9:15 to 11:00 A.M.. Laboratory—Sat., 11:10 A.M. to 1:00 P.M.

Psychology 233 Individual Psychological Testing (3)

E. Johnson

Instruction and practice in giving the Binet Test and the Wechsler-Bellevue Test. Emphasis is placed on testing children and adolescents. Prerequisite: an elementary course in tests and measurements. Material fee, \$5. Fri., 4:10 to 6:00 P.M.

Psychology 233x, same as 233, offered spring term. Afternoon.

Education 239 Teaching the Core Curriculum * (3)

Bish

An examination and study of classroom teaching procedures appropriate to the core program. (Not offered in 1954-55.)

Education 243 Human Relations in the Classroom * (3)

Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Not offered in 1954-55.)

Education 251 Guidance in Secondary Schools * (3)

Brougher

Scope; needs; organization of the program; services to students, the instructional staff, and the administration, personnel needed for the program. Registration for this course must be approved by the Dean. Sat., 9:10 to 11:10 A.M.

Education 254 The Junior High School * (3)

Bish, Root

Purposes, organization, core program, guidance, developing course of study, extra-classroom activities. (Not offered in 1954-55.)

* Prerequisite: adequate professional preparation.

Education 255-56 Secondary Education * (3-3)

Root

Fall term: current proposals for the reorganization of secondary education.
 Spring term: current problems in each of the subject-matter fields. Mon.
 7:10 to 9:10 P.M.

Education 259-60 Secondary School Management * (3-3)

J. H. Fox, H. Johnson

For experienced teachers and administrators with three years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs. Ten meetings. Sat., 9:30 A.M. to 3:00 P.M.

Education 263-64 Employee Training (3-3)

Root

Fall term: nature and purposes, organization and administration of programs—orientation, executive, supervisory, apprentice, and clerical skills; training media and techniques; coordination with other management functions. Spring term: current practices, operating policies, and programs of selected organizations. Prerequisite: adequate professional preparation or two years of experience in employee training. Wed., 7:10 to 9:10 P.M.

Education 271 The Teacher and School Administration * (3)

Fox

A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. Wed., 7:10 to 9:10 P.M.

Education 272 The Teacher and School Supervision * (3)

Fox

Nature, organization, human relationships, and techniques. Wed., 7:10 to 9:10 P.M.

Education 276 Seminar: Public Relations in School Administration * (3)

Root

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy-making. (Not offered in 1954-55.)

Education 278 School Law * (3)

Remmlein

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Not offered in 1954-55.)

Education 279-80 Adult Education * (3-3)

Ruffner

Fall term: current concepts and objectives, agencies involved, programs on all levels—international through community. Spring term: the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. Tues., 7:35 to 9:35 P.M.

Education 281 Group Procedures in Education * (3)

Ruffner

Theory, practice, evaluation, and application to all educational levels. Fri.
 7:10 to 9:10 P.M.

* Prerequisite: adequate professional preparation.

- Education 285 *Extra-classroom Activities* * (3)** Root
 Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contests; particular attention to sponsorship, participation, finance, and evaluation. (Not offered in 1954-55.)
- Education 287-88 *Clinical Study of Reading Problems* * Coleman (3-3)**
 For advanced students. Diagnostic and corrective work under supervision in the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223-24 or the equivalent. Education 287: Material fee, \$5. Sat., 11:10 A.M. to 1:00 P.M.
- Education 289-90 *Supervisory Problems in Reading* * Coleman (3-3)**
 For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program in promoting cooperative effort on the part of the staff toward increasing teacher efficiency. (Not offered in 1954-55.)
- Education 293-94 *Research* (3-3)** The Staff
 Individual research under the guidance of a member of the Staff. Program and conferences arranged with an instructor. Time to be arranged.
- Education 295 *Educational Research Methods and Procedures* (3)** J. H. Fox
 Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required. Tues. and Thurs., 6:10 P.M.
 Education 295x, same as 295, offered spring term. Fri., 5:10 to 7:00 P.M.
- Education 297 *Reading in Education*** The Staff
 To assist those preparing for the comprehensive examination. No credit toward degree requirements. Tuition fee, \$15. Wed., 5:10 P.M.
 Education 297x, same as 297, offered spring term. Wed., 5:10 P.M.
- Education 299-300 *Thesis* (3-3)** The Staff
 Required of all Master of Arts candidates following Plan 1. Time to be arranged.

DEPARTMENTS OF PHYSICAL EDUCATION

The following courses are offered by the Department of Physical Education for Men and the Department of Physical Education for Women. Whenever possible the departments offer lecture courses jointly.

FIRST GROUP

- 43-44 *Techniques of Physical Education Motor Activities* (2-2)** The Staff
 Fundamental skills, rules, and organization. Locker and towel fee, \$3 a term. Section A (women): Time to be arranged. Section B (men): Tues. and Thurs., 10:10 to 12:00 A.M.

* Prerequisite: adequate professional preparation.

† The locker and towel fee is required for registration in one or more of the activity courses.

45-46 *Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools (2-2) (men)*

The Staff

Tennis, golf, swimming, wrestling, badminton, bowling. Locker and towel fee,* \$3 a term. Tues. and Thurs., 1:10 to 3:00 P.M.

47 *Introduction to Physical Education (2)*

Krupa

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. Wed. and Fri., 1:10 P.M.

48 *Introduction to Recreation (2)*

Hanken

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership needed. Time to be arranged.

49 *Human Anatomy (3)*

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in physical education. Prerequisite: Biology 1-2 or Zoology 1-2. Mon., Wed., and Fri., 9:10 A.M.

50 *Kinesiology (3)*

Lawrence

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. Morning.

51-52 *Methods and Materials for Teaching Sports in Secondary Schools and Colleges (2-2) (women)*

The Staff

Team sports: basketball, hockey, softball, soccer, speedball, volleyball. Individual and dual sports: badminton, tennis, golf, archery, canoeing. Locker and towel fee,* \$3 a term. Time to be arranged.

58 *First Aid and Care of Athletic Injuries (2)*

De Angelis, Lawrence

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, massage. A practical course. Prerequisite: Biology 1-2 or Zoology 1-2. Afternoon.

SECOND GROUP

101 *Physical Education in the Elementary School (3)*

Atwell, Burtner

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, rhythms, and self-testing activities. Lecture—Tues., 5:10 P.M.; laboratory—Tues., 7:10 to 9:10 P.M.

* The locker and towel fee is required for registration in one or more of the activity courses.

- 103 *History and Principles of Physical Education* (3) Atwell, Krupa
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. Mon., Wed., and Fri., 2:10 P.M.
- 105-6 *Corrective Physical Education and Physical Examinations* (3-3) Lawrence
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises and program adaptation. Prerequisite: Biology 1-2 or Zoology 1-2. Mon., Wed., and Fri., 11:10 A.M.
- 107 *Techniques for Teaching Recreational Dance* (1) Burtner
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Locker and towel fee,* \$3 a term. Tues. and Thurs., 2:10 P.M.
- 109-10 *Leadership Organization in the Intramural Program* (2-2) De Angelis
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. Fri., 12:10 P.M.; laboratory to be arranged.
- 113-14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4-2 to 4) The Staff
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Section A: to be arranged; section B: lecture—Wed., 1:10 P.M.; laboratory to be arranged.
- 115-16 *Methods and Materials for Teaching Team Sports in Secondary Schools* (2 to 4-2 to 4) The Staff
Football, basketball, baseball, track and field. Locker and towel fee,* \$3 a term. Tues. and Thurs., 1:10 A.M.
- 117 *Methods of Teaching Modern Dance* (1 to 2) Burtner
(women)
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary-school and adult age levels. Locker and towel fee,* \$3 a term. Time to be arranged.
- 118 *Dance Production* (1 to 2) Burtner
Choreography for dance concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* \$3 a term. Time to be arranged.

* The locker and towel fee is required for registration in one or more of the activity courses.

- 121 *School and Community Health Programs* (3) Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1-2 or Zoology 1-2. Mon., Wed., and Fri., 10:10 A.M.
- 122 *Methods and Materials of Health Education* (3) Atwell
Organization and presentation of health materials for each age level. Prerequisite: Biology 1-2 or Zoology 1-2. Morning.
- 131 *Tests and Measurements in Physical Education* (3) Atwell
Critical survey of tests in physical activities, methods of test construction, elementary statistics. Wed. and Fri. 12:45 to 2:00 P.M.
- 132 *Camp Leadership* (1) Atwell
Survey course in camp counseling. Afternoon.
- 133-34 *Observation and Student Teaching* Atwell, Myers
(3-3 to 6)
Assignments are made to schools in Washington and the vicinity. Physical Education 134, student-teaching fee, \$10. Time to be arranged.
- 136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition. Evening.
- 138 *Organization and Administration of Physical Education* (3) Atwell, Myers
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. Morning.
- 151-52 *Recreational Leadership Activities* Christiansen
(1 to 3-1 to 3)
Fall term: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring term: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. 1954-55 and alternate years. Wed., 7:10 to 9:10 P.M.
- 161 *Community Organization for Recreation* Christiansen
(3)
Resources, principles, and methods in organizing community recreation services. 1955-56 and alternate years. Evening.
- 162 *Administration of Community Recreation Programs* (3) Christiansen
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. 1955-56 and alternate years. Evening.

SCHEDULE OF CLASSES

FALL TERM 1954-55

CLASSES MEETING ONCE A WEEK

MONDAY

1:10-3:00 P.M.	Ed. 109A: Learning and Teaching
6:10-8:00 P.M.	Ed. 121B: Society and the School
7:10-9:00 P.M.	Ed. 217: Contemporary Problems in Education
7:10-9:00 P.M.	Ed. 255: Secondary Education

TUESDAY

5:10-6:00 P.M.	P.E. 131: Physical Education in the Elementary School (Lecture)
6:10-8:00 P.M.	Psych. 225: Seminar: Mental Hygiene
7:10-9:00 P.M.	P.E. 101: Physical Education in the Elementary School (Laboratory)
7:35-9:35 P.M.	Ed. 213: History of Education
7:35-9:35 P.M.	Ed. 279: Adult Education

WEDNESDAY

1:10-3:00 P.M.	Ed. 121A: Society and the School
5:10-6:00 P.M.	Ed. 297: Reading in Education
6:10-8:00 P.M.	Ed. 109B: Learning and Teaching
7:10-9:10 P.M.	Ed. 223: Reading Problems
7:10-9:10 P.M.	Ed. 263: Employee Training
7:10-9:10 P.M.	Ed. 271: The Teacher and School Administration
7:10-9:10 P.M.	P.E. 151: Recreational Leadership Activities
8:10-10:00 P.M.	Psych. 223: Seminar: Learning

THURSDAY

6:10-8:50 P.M.	Psych. 129: Introduction to Counseling and Guidance
7:35-9:35 P.M.	Ed. 113: Elementary School Art
7:35-9:35 P.M.	Ed. 227: Elementary Education
7:35-9:35 P.M.	Ed. 231: Secondary School Classroom Procedures
8:10-10:00 P.M.	Psych. 231: Test Construction

FRIDAY

12:10-1:00 P.M.	P.E. 109: Leadership Organization in the Intramural Program
4:10-6:00 P.M.	Psych. 223: Individual Psychological Testing
7:10-9:10 P.M.	Ed. 215: Education of the Exceptional
7:10-9:10 P.M.	Ed. 281: Group Procedures in Education

SATURDAY

9:10-11:00 A.M.	Ed. 209: Child Growth and Development
9:10-11:00 A.M.	Ed. 251: Guidance in Secondary Schools
11:10 A.M.-2:00 P.M.	Ed. 259: Secondary School Management
11:10 A.M.-1:00 P.M.	Ed. 265: The Curriculum
11:10 A.M.-1:00 P.M.	Ed. 287: Critical Study of Reading Problems

CLASSES MEETING TWICE A WEEK**MONDAY AND WEDNESDAY**

4:30-5:45 P.M. Ed. 111: Elementary School Curriculum
 5:45-7:00 P.M. Psych. 29: Child Psychology

MONDAY AND FRIDAY

11:10 A.M.-12:25 P.M. Psych. 171: Psychology of Personality

TUESDAY AND THURSDAY

10:10-12:00 A.M. P.E. 43B: Techniques of Physical Education Motor Activities

10:10-11:00 A.M. P.E. 115 (men): Methods and Materials for Teaching Team Sports in Secondary Schools

11:10 A.M.-12:25 P.M. Psych. 131: Psychological Tests

12:45-2:00 P.M. Ed. 131: Common Teaching Skills

1:10-3:00 P.M. P.E. 45 (men): Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools

2:10-3:00 P.M. P.E. 107: Techniques for Teaching Recreational Dance

6:10-7:25 P.M. Psych. 22x: Introduction to Educational Psychology

6:10-7:25 P.M. Ed. 295: Educational Research Methods and Procedures

7:35-8:50 P.M. Speech 175: Speech Correction

7:35-8:50 P.M. Psych. 144x: Personnel Psychology

WEDNESDAY AND FRIDAY

1:10-2:00 P.M. P.E. 47: Introduction to Physical Education

12:45-2:00 P.M. P.E. 131: Tests and Measurements in Physical Education

CLASSES MEETING THREE TIMES A WEEK**MONDAY, WEDNESDAY, AND FRIDAY**

9:10-10:00 A.M. P.E. 49: Human Anatomy

10:10-11:00 A.M. P.E. 121: School and Community Health Programs

11:10-12:00 A.M. P.E. 105: Corrective Physical Education and Physical Examinations

11:10-12:00 A.M. Psych. 141: Leadership, Group Behavior, and Student Life

2:10-3:00 P.M. P.E. 103: History and Principles of Physical Education

SPRING TERM 1954-55**CLASSES MEETING ONCE A WEEK****MONDAY**

1:10-3:00 P.M. Ed. 111A: Learning and Teaching

6:10-8:00 P.M. Ed. 122B: Society and the School

7:40-9:10 P.M. Ed. 136: Teaching English

7:40-9:10 P.M. Ed. 218: Contemporary Problems in Education

7:40-9:10 P.M. Ed. 256: Secondary Education

8:10-1:00 P.M. Psych. 228: Seminar: Techniques of Counseling

TUESDAY

- 5:10-7:00 P.M. Ed. 140: Teaching Mathematics
 5:10-7:00 P.M. Ed. 146: Teaching Foreign Languages
 7:35-9:35 P.M. Ed. 128: Children's Literature
 7:35-9:35 P.M. Ed. 214: History of Education
 7:35-9:35 P.M. Ed. 280: Adult Education
 8:10-10:00 P.M. Psych. 229x: Occupational and Educational Information

WEDNESDAY

- 1:10-3:00 P.M. Ed. 122A: Society and the School
 5:10-6:00 P.M. Ed. 297x: Reading in Education
 6:10-8:00 P.M. Ed. 110B: Learning and Teaching
 7:10-9:10 P.M. Ed. 224: Reading Problems
 7:10-9:10 P.M. Ed. 264: Employee Training
 7:10-9:10 P.M. Ed. 272: The Teacher and School Supervision
 7:10-9:10 P.M. P.E. 152: Recreational Leadership Activities

THURSDAY

- 5:10-7:00 P.M. Ed. 144: Teaching Science
 7:35-9:35 P.M. Ed. 138: Teaching Social Studies
 7:35-9:35 P.M. Ed. 212: Evaluation in Education
 7:35-9:35 P.M. Ed. 228: Elementary Education
 7:35-9:35 P.M. Psych. 227x: Seminar: Counseling and Guidance

FRIDAY

- 4:10-6:00 P.M. Psych. 233x: Individual Psychological Testing
 5:10-7:00 P.M. Ed. 295x: Educational Research Methods and Procedures
 7:10-9:10 P.M. Ed. 114: Elementary School Music

SATURDAY

- 9:10-11:00 A.M. Ed. 210: Child Growth and Development
 9:10 A.M.-1:00 P.M. Ed. 233x: Audio-visual Education
 9:30 A.M.-3:00 P.M. Ed. 260: Secondary School Management
 11:10 A.M.-1:00 P.M. Ed. 206: The Curriculum
 11:10 A.M.-1:00 P.M. Ed. 288: Clinical Study of Reading Problems

CLASSES MEETING TWICE A WEEK

MONDAY AND WEDNESDAY

- 4:10-5:45 P.M. Ed. 112: Elementary School Curriculum

TUESDAY AND THURSDAY

- 10:10-12:00 A.M. P.E. 44: Techniques of Physical Education Motor Activities
 10:10-11:00 A.M. P.E. 116: Methods and Materials for Teaching Team Sports in Secondary Schools
 11:10 A.M.-12:25 P.M. Psych. 131x: Psychological Tests
 1:10-3:00 P.M. P.E. 46: Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools
 6:10-7:25 P.M. Psych. 22: Introduction to Educational Psychology
 6:10-7:25 P.M. Psych. 29x: Child Psychology

CLASSES MEETING THREE TIMES A WEEK

MONDAY, WEDNESDAY, AND FRIDAY

11:10-11:50 A.M. Psych. 144: Personnel Psychology
11:10-12:00 A.M. P.E. 106: Corrective Physical Education and Physical
Examinations

THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, D. C.

Report of the Treasurer

FOR THE YEAR ENDED
AUGUST 31, 1954

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LETTER OF TRANSMITTAL

November 30, 1954

TO THE PRESIDENT AND THE BOARD OF TRUSTEES
THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, D. C.

GENTLEMEN:

I am submitting herewith the Report of the Treasurer of The George Washington University for the fiscal year ended August 31, 1954. This report is a review of the budget operations for the year and is based on the budget approved by the Board of Trustees of the University.

The accounts of the University are kept and its financial reports set up as far as practicable in conformity with the recommendations of the National Committee on Standard Reports for Institutions of Higher Education. Under that plan the funds of the University are classified in various fund groups, and the accounts and financial statements are set up to segregate clearly the assets and liabilities of each of these groups as indicated in the balance sheet, Exhibit A.

R. G. Rankin & Co. have examined the accounts of the University for the past year, and their certificate is submitted herewith.

A condensed summary of the principal facts in the report is presented below and on succeeding pages, followed by detailed Exhibits and Schedules.

Respectfully submitted,
HENRY W. HERZOG
Treasurer

CONDENSED SUMMARY

CURRENT FUNDS—UNRESTRICTED

These Funds represent assets which are available for immediate use in the current operation of the University.

Current Income for the Year (Exhibit B and Schedule 1)	11,133,486.10
Current Expense for the Year (Exhibit B and Schedule 2)	10,629,147.15
Excess of Current Income over Current Expense (Exhibit B)	<u>504,338.95</u>
The latter amount was added to Current Funds Surplus. Surplus at the end of the year amounted to \$548,585.70 (Exhibit B). During the year there was transferred from Surplus to Net Investment in Plant \$523,527.88 for the purchase of land and buildings, \$15,778.44 for the purchase of equipment, and \$12,361.07 for the reduction of trust notes payable.	

Notes Payable of \$400,000.00 were paid in full September 9, 1954.

Accounts Receivable in the amount of \$886,875.13 include \$582,526.78 due from research contracts, and \$421,333.55 due the Hospital (Schedule 3). Of this latter amount \$177,375.36 is due from patients still in the Hospital, and from Group Hospitalization and other agencies under contracts. The remainder of \$243,958.19 represents past due accounts against which a reserve of \$151,451.12 has been provided to cover possible collection losses.

Prepaid Expense of \$287,578.29 includes \$138,465.98 at the University and \$149,112.31 at the Hospital (Schedule 3).

On August 31, 1954, the National University was merged with The George Washington University. All physical property (consisting of real estate appraised at \$122,500 and library and equipment valued at \$11,000) and other assets (consisting of \$1,501.15 in accounts receivable, \$1,500 matured U. S. Series C Bonds, and prepaid expense in amount of \$47.18) were conveyed to the University. The University advanced \$14,398.09 to effect the merger, and assumed liabilities consisting of accounts payable in the amount of \$4,830.99 and a first trust note of \$76,350 due March 27, 1956, secured by the real estate.

The excess of the assets over the liabilities and advances is \$40,969.25, \$1,500 of which is represented by the Schouler National University Library Endowment Fund. The balance of \$39,469.25 has been set up as a restricted fund (the National University Library Fund). When final sale of the assets is made and all liabilities are paid, the balance in this fund will be transferred to an endowment fund in accordance with the merger agreement. The income from this fund is to be used for the upkeep and maintenance of the National University law collection, a part of the law library of The George Washington University.

CURRENT FUNDS—RESTRICTED

Research grants, investment income, gifts, and agency funds comprise these funds which consist of current expendable assets, limited as to disposition (Exhibit C and Schedules 10, 10A, 10B, 10C).

During this year restricted gifts and grants for use as specified amounted to \$3,537,918.31 (page 90). Restricted endowments earned \$126,579.96. Unexpended Restricted and Agency Funds totaled \$615,718.26 (Exhibit C).

LOAN FUNDS

For the assistance of students seeking financial aid, loan funds have been established by the University and other organizations (Schedule 4). Loans are made at a low rate of interest and when repaid the interest is added to the principal of the funds.

During the year, 454 loans were made to students. Loan Funds totaled \$38,361.79.

ENDOWMENT FUNDS

The principal of all endowment funds amounted to \$3,526,072.53 (Exhibit E), an increase of \$69,654.25. These funds are represented by assets which, under the terms of wills, deeds of gift, or under the by-laws of the University, must be held in perpetual trust for income producing purposes. The principal amount and changes during the year of every endowment fund are recorded in Schedule 12. A description of the funds begins on page 93.

"Consolidated Endowment Funds" consisted of one hundred and sixteen endowments with a total value of \$2,102,730.82 (Schedule 5). The assets of these funds are combined to eliminate the possibility of partial or total loss of any fund through the failure of a specific investment, and to avoid temporary suspension of income and the carrying of uninvested small cash balances, and to give equality of treatment to all funds. Unless otherwise restricted by the donors, the assets of all new endowments are added to the assets of the Consolidated Endowment Funds.

Reserves for Protection of Investments were as follows: Consolidated Endowment Funds, \$87,928.92; Scottish Rite Fund, \$56,944.76 (Schedule 12).

Earnings of Consolidated Endowment Funds are recorded in one income account and at the end of the year are distributed to the participating funds in the proportion each fund bears to the total of the entire group. The rate of return on the investments of these funds amounted to 4.869% during the past year.

The Scottish Rite Endowment Fund earned 4.7411% net income on its investments during the year just ended.

Net income of all endowment funds for the year was \$163,950.46 (Schedule 10A—Page 3).

Pledges to the School of Medicine Endowment Fund on August 31, 1954, totaled \$217,464.00.

PLANT FUNDS—UNEXPENDED

Cash and other assets for development of the physical plant comprise these funds (Schedule 7). At the end of the year the balance was \$664,404.62 (Exhibit F).

Since the creation of the Tompkins Hall of Engineering Building Fund in 1946, gifts by Mr. Charles H. Tompkins and the late Mrs. Lida R. Tompkins, and income earned from the investment thereof, totaled \$432,018.56. After payment of construction costs of \$8,759.00, the balance in the Fund as of August 31, 1954, was \$423,259.56.

With the selection of Square 56 as the site for the Tompkins Hall of Engineering Building, \$272,962.69 was transferred from University Funds to Pairo Fund Principal (Schedule 13) to restore to the latter Fund the cost of its investment for a field house site in property in Square 56. The Pairo Fund was also paid income for the period of this investment based on the average rate of return of the University on its Consolidated Endowment Funds investments.

PLANT FUNDS—INVESTED IN PLANT

	BALANCE August 31, 1953	Net Additions	Deductions	BALANCE August 31, 1954
EXHIBITS A, B AND G, SCHEDULES 8 AND 9				
LAND AND BUILDINGS.....	17,043,495.36	116,433.37	.....	17,159,928.73
EQUIPMENT.....	1,945,594.97	16,690.48	.....	1,962,285.45
TRUST NOTES PAYABLE.....	630,853.87	77,988.93	.....	708,842.80
				— ∞ —
DUE TO RESTRICTED FUNDS.....	.....	57,150.00	.....	57,150.00
NET INVESTMENT IN PLANT.....	18,358,236.46	.....	2,015.08	18,356,221.38

In accordance with the agreement with the Washington Home for Foundlings, dated September 10, 1952, a deed was executed by the University as of August 31, 1954, conveying to the Washington Home for Foundlings a part of Lot 3 in Square 39 (book value \$55,946.00). Improvements thereon represent investment of Washington Home for Foundlings (\$400,000.00). The University simultaneously became the duly appointed and acting agent for the Washington Home for Foundlings to conduct and operate upon said premises a cancer clinic and cancer research center. The University has an option to repurchase the land for \$1.00 plus the fair market value of the building, less depreciation, at the time of the exercise of the option. (Schedule 8)

AUDIT CERTIFICATE

November 30, 1954

TO THE PRESIDENT AND THE BOARD OF TRUSTEES
THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, D. C.

We have examined the balance sheet of THE GEORGE WASHINGTON UNIVERSITY as of August 31, 1954, and the related statements of current income and expense, current funds surplus, and other fund transactions for the fiscal year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. It was not practicable to confirm receivables from United States Government Agencies, but we have applied other auditing procedures in verification of this asset.

In our opinion, the balance sheet and related statements of current income and expense, current funds surplus, and other fund transactions included in the accompanying REPORT OF THE TREASURER OF THE UNIVERSITY, present fairly the financial position of THE GEORGE WASHINGTON UNIVERSITY as of August 31, 1954, and the results of its operations for the fiscal year then ended, in conformity with generally accepted principles of university and college accounting applied on a basis consistent with that of the preceding year.

R. G. RANKIN & Co.
CERTIFIED PUBLIC ACCOUNTANTS

THE GEORGE WASHINGTON UNIVERSITY BALANCE SHEET

August 31, 1954

ASSETS		LIABILITIES	
CURRENT FUNDS		CURRENT FUNDS	
UNRESTRICTED		UNRESTRICTED	
Cash	26,836.10	Notes Payable—Riggs National Bank. Due on or before November 29, 1954. Interest 3 1/4 %	400,000.00
Accounts Receivable (Schedule 3)	886,875.13	Accounts Payable	182,105.29
		Deferred Income	53,279.28
Prepaid Expense (Schedule 3)	287,578.29	Due to Current Funds—Restricted	17,319.25
		Surplus (Exhibit B)	548,585.70
			1,201,289.52
RESTRICTED		RESTRICTED	
Cash	446,053.01		
Inventory—Gift Shop	5,196.00		
U. S. A. Bonds Series G, 2 1/2 % due 11-1-54...	50,000.00		
C. of L., 1 1/8 % due 8-15-55...	40,000.00		
Due from			
Current Funds—Unrestricted.	17,319.25		
Plant Funds—Invested in Plant	57,150.00		
		Principal of Funds (Exhibit C)	615,718.26
			615,718.26
LOAN FUNDS		LOAN FUNDS	
Cash	14,547.30		
Loans Receivable (Schedule 4)	23,814.49		
		Principal of Loans (Exhibit D)	38,361.79

ENDOWMENT FUNDS

CASH	46,003.52	
INVESTMENTS (Schedule 5) ..	3,113,672.06	
	<u>3,159,675.58</u>	
FUNDS HELD IN TRUST BY OTHERS (Schedule 6)	366,396.95	3,526,072.53
		<u>PRINCIPAL OF FUNDS (Exhibit E)</u>
		3,526,072.53

PLANT FUNDS

CASH	321,746.48	
INVESTMENTS (Schedule 7) ..	542,658.14	
	<u>864,404.62</u>	864,404.62
		<u>PRINCIPAL OF FUNDS (Exhibit F)</u>
LAND AND BUILDINGS (Schedule 8)	17,159,928.73	
		<u>INVESTED IN PLANT</u>
EQUIPMENT (Schedule 9)	1,962,285.45	
	<u>19,122,214.18</u>	
		<u>TRUST NOTES PAYABLE</u>
		(Schedule 8A)
		DUE TO CURRENT FUNDS—RE-
		STRICTED
		NET INVESTMENT (Exhibit G) ..
		18,356,221.38
		<u>19,122,214.18</u>

TOTAL	<u>25,368,060.90</u>	<u>TOTAL</u>
		<u>25,368,060.90</u>

SUMMARY OF CURRENT INCOME AND EXPENSE

For the Year Ended August 31, 1954

Income (Schedule 1)		
Educational and General		
Student Fees	2,906,544.82	
Investments	305,038.94	
Gifts	61,593.25	
Student Activities	71,155.32	
Miscellaneous	402,200.95	
Organized Research	3,354,999.76	
Hospital	3,574,912.23	
Auxiliary Enterprises		10,676,445.27
		<u>457,040.83</u>
		11,133,486.10
Expense (Schedule 2)		
Educational and General		
Administration and General	952,107.66	
Instruction	1,884,611.11	
Libraries	120,289.73	
Maintenance and Operation of Plant	466,166.25	
Student Activities	327,562.92	
Organized Research	3,354,999.76	
Hospital	3,652,675.45	
Auxiliary Enterprises		10,758,412.88
Student Aid		404,081.64
		<u>38,803.10</u>
		11,201,297.62
Less reimbursement of overhead included above	572,150.47	
		<u>10,629,147.15</u>

EXCESS OF CURRENT INCOME OVER CURRENT EXPENSE

504,338.95

SUMMARY OF SURPLUS For the Year Ended August 31, 1954

	HOSPITAL WORKING FUNDS	UNAPPRO- PRIATED	TOTAL EXHIBIT A
BALANCE AUGUST 31, 1953.....	<u>74,895.32</u>	<u>341,539.66</u>	<u>416,434.98</u>
ADDITIONS			
Excess of Current Income over Current Expense	(-77,763.22)	582,102.17	504,338.95
Reimbursement for Depreciation on Hospital Building and Equipment (Exhibit C)	<u>180,000.00</u>		<u>180,000.00</u>
	<u>102,836.78</u>	<u>582,102.17</u>	<u>684,938.95</u>
DEDUCTIONS			
Transferred to Net Investment in Plant—Exhibit G			
Land and Buildings	164,104.79	359,423.09	523,527.88
Equipment	15,778.44	12,361.07	15,778.44
Trust Notes Curtailed			12,361.07
Transferred to Schedule 13			
Hospital Equipment Fund—Physical Medicine	791.18	329.66	791.18
Pairo Fund	<u>180,674.41</u>	<u>372,113.82</u>	<u>552,788.23</u>
BALANCE AUGUST 31, 1954—EXHIBIT A.....	<u>(-2,942.31)</u>	<u>551,528.01</u>	<u>548,585.70</u>

EXHIBIT B

SUMMARY OF RESTRICTED CURRENT FUNDS PRINCIPAL For the Year Ended August 31, 1954

	ORGANIZED RESEARCH (Schedule 10)	INVESTMENT INCOME (Schedule 10A)	MISCEL- LANEOUS (Schedule 10B)	AGENCY (Schedule 10C)	TOTAL EXHIBIT A
BALANCE AUGUST 31, 1953	255,286.98	72,475.51	122,930.82	19,143.81	469,837.12
ADDITIONS					
Gifts, grants, receipts, deposits	3,435,665.35		138,365.49	37,380.34	
Investment income		345,075.46	1,411.78		
	3,435,665.35	345,075.46	139,777.27	37,380.34	3,957,898.42
DEDUCTIONS					
Salaries	1,942,051.32		278.43		
Expense	1,412,948.44		9,225.00		
Scholarships, fellowships		8,389.90	255.00		
Prizes		1,722.25			
Transferred to					
Exhibit G—Net Investment in Plant.		474.37			
Schedule 1—Current Income		305,038.94	59,553.24		
Schedule 1—Current Income—Hospital		2,475.40			
Schedule 10—Organized Research			943.24		
Schedule 10B—Restricted Miscellaneous Funds		1,411.78			
Schedule 12—Endowment Funds		2,238.14	930.84	14,176.00	
Schedule 13—Plant Funds		17,407.18			
Withdrawals				32,497.81	
	3,384,999.76	387,157.96	71,185.75	46,673.81	3,812,017.28
BALANCE AUGUST 31, 1954—EXHIBIT A	335,952.57	78,393.01	191,522.34	9,850.34	615,718.26

SUMMARY OF LOAN FUNDS PRINCIPAL

For the Year Ended August 31, 1954

BALANCE AUGUST 31, 1953	37,183.00
ADDITIONS (Schedule 11)	
Gifts	1,153.64
Interest on loans	<u>678.25</u>
	1,831.89
	<u>39,014.89</u>
DEDUCTIONS (Schedule 11)	
Transferred to Schedule 10	400.00
Refunded to U. S. Government	<u>253.10</u>
	653.10
BALANCE AUGUST 31, 1954—EXHIBIT A	<u>38,361.79</u>

EXHIBIT D

SUMMARY OF ENDOWMENT FUNDS PRINCIPAL

For the Year Ended August 31, 1954

BALANCE AUGUST 31, 1953..... 3,456,418.28

ADDITIONS (Schedule 12)

Gifts.....	62,110.21
Investment income.....	2,254.88
Acquired by National University merger.....	1,500.00
Transferred from Schedule 10B.....	930.84
Gains on sales of investments.....	3,191.57
	<u>69,987.50</u>
	3,526,405.78

DEDUCTIONS (Schedule 12)

Net loss on sales of investments.....	278.25
Transferred to Schedule 13.....	55.00
	<u>333.25</u>

BALANCE AUGUST 31, 1954—EXHIBIT A.... 3,526,072.53

SUMMARY OF PLANT FUNDS PRINCIPAL

For the Year Ended August 31, 1954

BALANCE AUGUST 31, 1953		607,717.51
ADDITIONS (Schedule 13)		
Gifts		
Investment income	263,746.81	
Net gains from sales of investments	10,955.74	
Transferred from Exhibit B	78.18	
Transferred from Exhibit G	1,120.84	
Transferred from Schedule 12	272,633.03	
	<u>55.00</u>	
		548,589.60
		<u>1,156,307.11</u>
DEDUCTIONS (Schedule 13)		
Land and Buildings—Invested in Plant—Exhibit G	244,984.52	
Equipment—Invested in Plant—Exhibit G	2,475.67	
Transferred to Schedule I	44,442.50	
		<u>291,902.49</u>
BALANCE AUGUST 31, 1954—EXHIBIT A		864,404.62

EXHIBIT F

SUMMARY OF NET INVESTMENT IN PLANT

For the Year Ended August 31, 1954

BALANCE AUGUST 31, 1953.....				18,358,236.46
ADDITIONS				
Land and Buildings (Schedule 8)				
Surplus (Exhibit B).....	523,527.88			
Plant Funds (Exhibit F).....	244,984.52			
Trust Notes Payable.....	90,350.00			
Due to Restricted Funds.....	46,150.00		905,012.40	
Transferred to Pairo Fund (Schedule 13).....	272,633.03			
Decided to Washington Home for Foundlings—Land.....	55,946.00			
Building.....	400,000.00	728,579.03	176,433.37	
Equipment (Schedule 9)				
Sections (Exhibit B)				
Restricted Current Funds (Exhibit C).....	15,778.44			
Plant Funds (Exhibit F).....	474.37			
Departments (Schedule 2).....	2,475.67			
Gift (Appendix—Page 1).....	65,344.00			
Due to Restricted Funds.....	42,218.00			
	11,000.00		137,290.48	313,723.85
				18,671,960.31
DEDUCTIONS				
Depreciation—Hospital (Schedules 2 and 8)—Exhibit B.....	60,000.00			
Hospital Equipment (Schedules 2 and 9)—Exhibit B.....	120,600.00		180,600.00	
Trust Notes assumed during year.....	90,350.00			
Trust Notes curtailed (Exhibit B).....	12,361.07		77,988.93	
Due to Restricted Funds.....			57,150.00	315,738.91
BALANCE AUGUST 31, 1954—EXHIBIT A.....				18,356,221.38

SCHEDULES

CURRENT INCOME

For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL

STUDENT FEES	
Tuition and Laboratory	277,891.66
Columbian	76,471.24
Education	161,713.25
Engineering	158,976.43
General Studies	12,675.00
Institute of Correctional Administration	113,726.87
Government	126,514.88
Air Force Manpower Management	23,350.00
Navy Comptroller	5,060.00
Foreign Service Review	23,579.32
Graduate Council	586,669.68
Junior	293,560.31
Law	300,216.00
Medicine	12,966.95
Post-Graduate Medical Education	24,271.00
Pharmacy	137,793.71
Special Students	247,678.90
University Students	

2,583,145.20

Summer Sessions

240,824.30

Unallocated—Old Fees

2,445.55

2,826,415.05

Miscellaneous Fees

Application	25,803.00	
Aptitude	618.00	
Art Validation	75.00	
Binding Theses	625.00	
Breakage	518.00	
Engineers' Council	1,740.54	
Graduation	27,270.00	
Late	1,010.00	
Library Fines	397.04	
Publication of Theses	2,325.00	
Reinstatement	1,210.00	
Service	2,467.00	
Special Examinations	298.00	
Student Bar Association	4,795.00	
Testing Center	7,406.65	
Transcripts	3,570.94	
	80,129.77	2,906,544.82

CURRENT INCOME (Continued)

For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL (Continued)

INVESTMENT INCOME (Schedule 10A)

Endowment Funds—Unrestricted

" " Restricted

Plant Funds—Restricted

37,370.50

105,362.40

142,732.90

162,306.04

305,038.94

GIRLS

Unrestricted (Page 90)

Restricted (Schedule 10B—portion used)

Restricted (Page 90)

500.00

59,553.24

1,540.01

61,093.25

61,593.25

STUDENT ACTIVITIES—Student Council

Athletics

Cherry Tree

Dramatics

Engineers' Council

Handbook

Hatchet

Homecoming

Modern Dance

Student Bar Association

Student Council Reserve

46,916.22

6,807.60

3,485.25

468.65

697.78

6,022.35

4,848.25

712.28

1,111.28

85.66

71,155.32

MISCELLANEOUS		
Discounts Earned	6,026.61	
Handling Fee Veterans Administration	11,377.66	
Law Review	3,026.34	
Mecheleiv	1,699.20	
Miscellaneous	3,974.11	
Parking Lot—2314 I Street, NW	20,901.60	
Reading Clinic	22,896.50	
Rent on Miscellaneous Properties—Net	67,639.13	
Speech Clinic	5,717.50	
Transfer from Hospital (Page 35) for Support of School of Medicine	215,000.00	
Transfer from Law Center Fund (Schedule 13) for campaign expense	44,442.30	402,200.95

ORGANIZED RESEARCH (Schedule 10)		
Deferred from 1952-53	255,286.98	
Income 1953-54	3,435,665.35	3,690,952.33
Deferred to 1954-55	335,952.57	3,354,999.76

CURRENT INCOME (Continued)
For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL (Continued)

HOSPITAL

Patients

Room Charges

Private	449,345.00
Semi-Private	1,085,860.72
Wards	224,671.00
Nurses	112,337.00
	<u>1,872,213.72</u>

Special Service Departments

Operating Rooms	204,785.95
Delivery Rooms	110,521.95
Anesthesiology	249,516.65
Oxygen Therapy	44,323.26
X Ray	231,771.80
Physical Medicine	75,309.40
Laboratories—Tests	342,421.08
Pathology	48,280.00
Pharmacy	223,056.64
Cardiology	26,821.50
Electroencephalography	8,476.00
Radioisotopes Laboratory	5,660.00
Post-Anesthesia Room	19,221.00
	<u>1,590,165.23</u>

Out-Patient Departments

Clinics	36,374.55
Emergency	16,237.15
Ophthalmology	53.00
Urology	11,563.80
Surgery	3,267.15
Dental	917.65
Gynecology—Obstetrics	2,668.05
	<u>71,081.35</u>

Other Income			
Medical and Surgical Supplies	128,227.04		
Special Duty Nurses	6,086.50		
Telephone	16,811.30	151,124.84	
		<u>3,684,585.14</u>	
Less Allowances			
Group Hospitalization	50,266.56		
Hospital Service Agency	7,111.65		
D. C. Health Department	1,333.70		
Discounts	5,093.16		
Free Work	154,446.16		
Other	2,243.93		
		<u>220,495.16</u>	3,464,089.98
Other Hospital Income			
Endowment			
Gifts	2,475.40		
Sales	1,922.46		
Miscellaneous	1,480.50		
Parking Rent	600.00		
Bad Debt Recovery	1,387.43		
Fan Rent	414.15		
Miscellaneous	3,586.80		
		<u>11,866.74</u>	
Other Income			
Cafeteria	95,740.38		
Laundry	1,852.60		
Medical Abstracts	895.43		
Telephone Commissions	467.10		
		<u>98,955.51</u>	110,822.25
			<u>3,574,912.23</u>

CURRENT INCOME (Continued)
For the Year Ended August 31, 1954)

AUXILIARY ENTERPRISES

RESIDENCE HALLS

Nurses Home—Everglades Apartments
Interns' and Residents' Hall
Strong Hall
Wedding Hall
2025 H Street, NW

24,924.34
6,000.00
33,044.32
21,214.62
3,313.99

88,497.27

SORORITY HALLS

2112 G Street, NW.
2129 G Street, NW.
2131 G Street, NW.
802 21st Street, NW.

1,350.00
4,505.00
640.00
630.00

7,145.00

MISCELLANEOUS

Book Store—University
Book Store—Medical
Cafeteria—Commissions
Duplicating Bureau
Lianer Auditorium
Student Union

290,924.11
43,381.33
3,750.00
406.17
20,153.00
2,783.95

361,398.56

457,040.83

TOTAL—EXHIBIT B

11,133,486.10

CURRENT EXPENSE

For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL

ADMINISTRATION AND GENERAL			
	TOTAL	SALARIES	OTHER EXPENSE
President's Office	51,841.37	37,374.62	14,466.75
Administrative Secretary's Office	49,166.07	45,512.53	3,466.44
Dean of Faculties Office	60,718.16	34,280.45	26,437.71
Treasurer's Office	195,149.30	166,219.46	28,929.84
Admissions Office	42,933.71	38,706.15	4,227.56
Registrar's Office	48,932.15	43,459.69	5,472.46
Activities for Men	23,519.50	19,814.48	3,705.02
Activities for Women	12,428.55	11,508.97	919.58
Educational Counseling	6,626.32	5,431.63	1,194.69
Adviser to Students from Foreign Countries	1,130.26	450.00	680.26
University Chapels	1,490.81	1,010.00	480.81
Veterans Administration	13,849.98	13,301.09	548.89
Staff Benefits	114,429.55	16,078.04	98,351.51
Alumni Relations	26,341.92	12,367.28	13,974.64
Public Relations	45,495.79	19,216.22	26,124.57
Convocations	17,749.58	1,274.44	16,475.14
Scientific Activities	5,390.04	4,907.34	482.70
Financial	184,491.71		184,491.71
Campaign	44,442.30	5,025.91	39,416.39
Middle States Evaluation	5,980.59	5,108.29	872.30
TOTAL	952,107.66	481,046.59	470,718.97
			187.10
			155.00
			342.10

SCHEDULE 2—PAGE 1

CURRENT EXPENSE (Continued)
For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL (Continued)

	TOTAL	SALARIES	OTHER EXPENSE	EQUIPMENT EXHIBIT C
INSTRUCTION				
Columbia College				
Administration	3,882.97	3,416.68	466.29	
Art	18,604.39	12,070.00	6,534.39	
Biology	12,595.81	11,985.00	508.56	102.25
Botany	8,941.20	8,675.00	266.20	
Chemistry	63,677.21	56,507.96	6,824.95	344.30
Classical Languages and Literature	3,009.77	3,000.00	9.77	
Economics	38,811.37	38,665.00	146.37	
English	93,868.11	93,645.00	223.11	
Geography	12,810.79	12,065.00	496.30	
Germanic Languages	9,206.21	9,180.00	26.21	
History	49,988.07	49,838.34	149.73	
Journaism	12,713.00	12,525.00	188.00	
Mathematics	30,801.65	30,780.00	21.65	
Philosophy	6,196.80	6,180.00	16.80	
Physics	41,599.36	40,084.00	1,014.49	500.87
Political Science	31,259.98	31,160.00	99.98	
Psychology	38,267.48	37,745.00	386.09	136.39
Religion	13,726.87	13,710.00	16.87	
Romance Languages	55,991.45	55,790.00	201.45	
Secretarial Studies	6,884.23	5,560.00	394.88	429.35
Slavic Languages	3,818.48	3,800.00	18.48	
Sociology	13,545.19	13,520.00	25.19	
Speech	25,915.28	24,680.99	1,134.46	99.83
Theology	22,689.50	19,987.49	2,624.00	297.92
	638,525.17	594,570.46	21,794.31	2,160.40

Education				
Administration	5,248.78	4,545.26	703.52	
Education	40,862.24	39,478.00	1,384.24	
Home Economics	11,719.24	10,680.00	1,119.24	
	<u>57,830.26</u>	<u>54,623.26</u>	<u>3,207.00</u>	

Engineering				
Administration	8,365.63	5,417.70	2,947.93	2,222.14
Civil	33,690.48	30,704.00	764.34	1,186.35
Electrical	21,187.51	19,270.00	731.16	1,294.13
Mechanical	23,429.58	21,440.00	695.45	
Engineers Council	911.15		911.15	
Mecheleciv	<u>2,899.20</u>		<u>2,899.20</u>	
	90,483.55	76,831.70	8,949.23	<u>4,702.62</u>

General Studies				
Administration	52,196.48	43,935.37	8,261.11	
Instruction	79,112.50	79,112.50		
Reading Clinic	13,446.56	12,561.29	485.27	400.00
Institute of Correctional Administration	7,281.08	6,455.00	826.08	
	<u>152,036.62</u>	<u>142,064.16</u>	<u>9,572.46</u>	<u>400.00</u>

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL (Continued)

INSTRUCTION (Continued)

	TOTAL	SALARIES	OTHER EXPENSE	EQUIPMENT EXHIBIT G
Government				
Administration	5,762.65	5,059.67	702.98	
Accounting	21,270.00	21,170.00	100.00	
Air Force Manpower Management	71,179.00	53,393.00	15,205.00	2,581.00
Business Administration	23,736.15	23,662.00	74.15	
Federal Government Management Interns	1,000.00	1,000.00		
Ford Foundation	3,710.71	3,000.00	710.71	
Foreign Affairs	1,800.00	1,800.00		
Foreign Service Review Course	4,940.58	4,585.50	355.08	
Government and Economic Policy	900.00	900.00		
Navy Comptrollership Program	13,351.57	11,569.32	1,782.25	
Public Administration	4,170.00	4,170.00		
Statistics	18,298.42	18,220.00	78.42	
	170,119.08	148,529.49	19,008.59	2,581.00
Graduate Council				
Administration	6,758.58	3,195.96	3,562.62	
Instruction	2,216.56	1,000.00	1,216.56	
	8,975.14	4,195.96	4,779.18	
Junior—Administration	4,337.32	3,364.54		972.78

Administration	22,972.20	13,612.15	9,260.05
Instruction	148,806.00	146,706.00	2,100.00
Law Review	11,328.96	1,782.00	9,546.96
Patent Law Foundation Sloan	7,150.39	5,751.47	1,399.12
Patent, Trade-Mark and Copyright Foundation	8,708.82	8,233.39	475.43
Student Bar Association	2,549.78		2,549.78
	201,416.35	176,085.01	25,331.34

Medicine

Administration	36,409.30	29,974.11	5,995.01	2,440.18
Anatomy	36,365.16	34,453.31	1,421.00	490.85
Bacteriology, Hygiene, Preventive Medicine	36,734.39	33,274.96	1,992.91	1,466.52
Biochemistry	36,327.94	33,996.62	2,067.32	264.00
Dermatology, Syphilology	1,450.00	1,450.00		
Lecturers and Exchange Professors	960.00	960.00		
Medicine	37,026.22	35,671.49	713.43	641.30
Neurology, Neurological Surgery	5,689.78	5,514.98	174.80	
Obstetric, Gynecology	23,174.92	22,924.92	250.00	
Ophthalmology	1,573.54	1,325.00	248.54	
Otolaryngology	100.00		100.00	
Pathology	23,153.41	22,003.57	755.73	394.11
Pediatrics	15,220.36	15,126.64	93.72	
Pharmacology	25,009.28	23,500.00	925.92	583.36
Physical Medicine and Rehabilitation	3,100.00	3,100.00		
Physiology	37,572.19	35,224.29	1,997.90	350.00
Post Graduate Medical Education	12,966.95	5,915.00	7,051.95	
Psychiatry	2,049.79	1,950.00	99.79	
Research General	18,574.12	6,536.68	7,390.98	4,446.46
Surgery	28,684.49	28,224.84	459.65	
Urology	1,529.90	1,450.00	79.90	
	383,471.74	342,576.41	29,818.55	11,076.78

SCHEDULE 2—PAGE 3

CURRENT EXPENSE (Continued)
For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL (Continued)

INSTRUCTION (Continued)

	TOTAL	SALARIES	OTHER EXPENSE	EQUIPMENT EXHIBIT C
Pharmacy—Administration.....	2,471.08	1,860.00	611.08	
" Instruction.....	30,114.27	28,119.80	1,380.18	614.29
	32,585.35	29,979.80	1,991.26	614.29
Special—Administration.....	4,988.78	4,905.75	83.03	
University—Administration.....	5,341.69	4,599.96	741.73	
Summer Sessions—Administration.....	7,515.34	4,438.80	3,076.54	
" " Instruction.....	81,831.69	78,855.00	2,976.69	
	89,347.03	83,293.80	6,053.23	
Air Science and Tactics—R. O. T. C.....	5,540.60	5,272.55	268.05	

Physical Education--Men..	31,182.90	23,954.50	7,228.40
"Women..	28,429.53	23,324.22	5,105.31
"	59,612.43	47,278.72	12,333.71
TOTAL INSTRUCTION	1,884,611.11	1,718,171.57	21,535.09
LIBRARIES--Books..	29,430.41		29,430.41
"Other.	90,859.32	78,086.91	12,474.51
	120,289.73	78,086.91	29,728.31
MAINTENANCE AND OPERATION OF PLANT	466,166.25	225,526.59	13,298.73
STUDENT ACTIVITIES			
Dramatics	11,901.86	7,117.00	4,784.86
Health Administration	21,234.53	16,640.00	4,594.53
Men's Athletics	256,476.03	36,484.42	219,991.61
Recreation Program	2,137.88	955.00	1,182.88
Student Activities Office	3,793.51	2,431.00	1,362.51
Student Council Accounts	27,577.46		27,577.46
University Accounts	4,441.65	2,750.00	1,691.65
	327,562.92	66,377.42	261,185.50
ORGANIZED RESEARCH (Schedule 10)	3,354,999.76	1,942,051.32	1,412,948.44

CURRENT EXPENSE (Continued)
For the Year Ended August 31, 1954

EDUCATIONAL AND GENERAL (Continued)

	TOTAL	SALARIES	OTHER EXPENSE	EQUIPMENT EXHIBIT C
HOSPITAL				
Administration	363,724.77	166,819.85	196,904.92	
Dietary.....	525,548.31	220,633.80	304,914.51	
Houshold and Property				
Laundry	56,265.82	55,449.27	816.55	
Linen Service.....	38,305.25	12,599.67	25,705.58	
Housekeeping.....	158,550.13	139,797.92	18,752.21	
Plant	165,973.22	67,483.69	98,489.53	
	419,094.42	275,330.55	143,763.87	
Professional Care—General				
Medical and Surgical Service	83,302.40	70,406.40	12,896.00	
Nursing Care	813,317.24	777,947.29	35,369.95	
Central Sterile Supply	84,403.04	23,245.03	61,158.01	
	981,022.68	871,598.72	109,423.96	
Professional Care—Special				
Post-Anesthesia Room	7,681.69	7,681.69		
Operating Rooms	137,793.07	83,924.54	53,868.53	
Delivery Rooms	67,906.39	58,080.44	9,825.95	
Anesthesiology	101,226.63	78,991.43	22,235.20	
Oxygen Therapy.....	23,588.64	8,340.34	15,248.30	
Cardiology	11,510.74	10,168.38	1,342.36	

Electroencephalography . . .	6,018.24	5,721.30	296.94
Laboratories	134,272.79	117,292.62	16,980.17
Pharmacy	103,679.09	21,251.38	82,427.71
Physical Medicine	40,444.93	38,895.44	1,549.49
Radioisotope Laboratory . . .	1,924.21		1,924.21
X-Ray	119,921.36	82,660.55	37,260.81
Medical Records	46,055.21	31,237.14	14,818.07
Medical Library for Residents and Interns . .	1,869.06	1,269.06	600.00
	<u>803,892.05</u>	<u>545,514.31</u>	<u>258,377.74</u>
Out-Patient Department			
Administration	43,385.17	29,178.04	14,207.13
Nursing Care	43,144.46	43,144.46	
	<u>86,529.63</u>	<u>72,322.50</u>	<u>14,207.13</u>
Miscellaneous			
Scholarships	4,869.00		4,869.00
Interest	514.59		514.59
Nurses Home	15,000.00		15,000.00
Residents' and Interns' Room Charges . . .	(-9,120.00)		(-9,120.00)
Allowance for Doubtful Accounts	66,000.00		66,000.00
Depreciation - Building (Exhibit G) (Schedule 8)	60,000.00		60,000.00
" Equipment (Exhibit G) (Schedule 8) . . .	120,000.00		120,000.00
Transferred to University for support of School of Medicine (Schedule I)	215,000.00		215,000.00
	<u>472,863.59</u>		<u>472,863.59</u>
	<u>3,652,675.45</u>	<u>2,152,219.73</u>	<u>1,500,455.72</u>

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1954

AUXILIARY ENTERPRISES

RESIDENCE HALLS

Strong Hall.....	40,602.14	13,890.70	26,711.74	
Welling Hall.....	9,992.99	3,184.81	6,808.18	
Interns' and Residents' Hall.....	1,242.22	150.00	1,092.22	
2025 H Street, NW.....	1,849.75	700.33	1,149.42	
	53,687.40	17,925.84	35,761.56	

SORORITY HALLS

2112 G Street, NW.....	524.83	120.00	404.83	
2129 G Street, NW.....	2,757.75	675.00	2,082.75	
2131 G Street, NW.....	394.26	100.00	294.26	
	3,676.84	895.00	2,781.84	

SERVICES

Book Store—University.....	200,332.90	44,472.73	245,860.17	439.77
" " Medical School.....	37,328.85	4,588.01	32,301.07	
Lisner Auditorium.....	18,813.00	10,451.83	8,361.17	
Duplicating Bureau.....	242.65		242.65	
	346,717.40	59,512.57	286,765.06	439.77
	404,081.64	78,333.41	325,308.46	439.77

STUDENT AID

SCHOLARSHIPS	38,803.10	38,803.10
 TOTAL EXPENSE	11,201,297.62	6,741,813.54
Less overhead expense charged to various departments and included in "Other Expense" above	572,150.47	4,394,140.08
 TOTAL EXPENSE, ADJUSTED—EXHIBIT B	10,629,147.15	65,344.00

ACCOUNTS RECEIVABLE AND PREPAID EXPENSE

August 31, 1954

ACCOUNTS RECEIVABLE

Organized Research Funds
 Tuition and Other Fees
 Dormitory Rent
 Mecheleiv
 Student Bar Association
 Educational and Institutional Cooperative Service
 Hospital
 Less Provision for Doubtful Accounts

EXHIBIT A

582,526.78
 33,568.21
 285.78
 385.65
 6.38
 219.90
 421,333.55
 151,451.12
 269,882.43
 886,875.13

PREPAID EXPENSE

University Supplies—Stockroom
 " " Book Store—University
 " " Medical
 " Microscopes
 " Travel
 " IA-W-354 Thailand
 " HmRRRO Europe
 " Miscellaneous
 Hospital Supplies—Medical and Surgical
 " Pharmacy
 " Maintenance and Housekeeping
 " Linens and Bedding
 " Office
 " Food
 " Insurance

48,690.00
 53,054.00
 12,236.00
 473.76
 6,878.81
 2,597.38
 2,648.66
 11,887.37
 70,010.00
 15,783.00
 10,044.00
 17,555.00
 4,260.00
 5,021.00
 26,419.31
 138,465.98
 149,112.31
 287,578.29

ASSETS OF LOAN FUNDS

August 31, 1954

FUNDS	TOTAL	CASH	LOANS RECEIVABLE
D.C.—D.A.R. Loan Fund.	90.40		90.40
Home Economics Loan Fund	382.35	382.35	
Kellogg Loan Fund.	18,899.82	2,778.29	16,121.53
Law Association Loan Fund	853.15	705.96	147.19
Pfizer Loan Fund	1,000.00	300.00	700.00
Schoenfeld Pharmacy Loan Fund	1,067.00	1,067.00	
School of Medicine Loan Fund	1,227.42	827.42	400.00
Sutherland Loan Fund	1,360.00		1,360.00
University Loan Fund	8,486.28	8,486.28	
War Loan Fund	4,995.37		4,995.37
TOTALS—EXHIBIT A.	38,361.79	14,547.30	23,814.49

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SCHEDULE 4

R. J. Reynolds Tobacco Co.	Debtenture	3	1973	30,000	29,700.00	30,033.00
Service Pipe Line Co.	Sinking Fund Debtenture	3.2	1982	25,000	25,750.00	25,000.00
Southern Railway Co.	Non-callable First Consol. Mortgage	5	1994	1,000	1,330.00	1,220.00
" " "	Development and General Mtg. A.	6½	1956	2,000	2,140.00	2,030.00
State Loan and Finance Corporation	Sinking Fund Debtenture	3¾	1966	5,000	4,950.00	5,000.00
" " "	Sinking Fund Subordinated Deb.	5	1960	10,000	10,000.00	10,000.00
United Gas Corporation	Sinking Fund Debtenture	4¾	1972	20,000	21,200.00	20,422.00
United States of America	Treasury	2¼	1959-62	30,000	30,225.00	30,000.00
"	Treasury	2¼	1967-72	8,000	7,990.00	7,795.00
"	Savings G	2½	10-54	23,000	22,816.00	23,000.00
"	Savings G	2½	11-54	47,000	46,624.00	47,000.00
"	Savings G	2½	1-55	17,000	16,864.00	17,000.00
"	Savings G	2½	4-55	36,500	35,989.00	36,500.00
"	Savings G	2½	9-55	41,100	40,524.00	40,880.00
"	Savings G	2½	10-55	7,500	7,365.00	7,456.00
"	Savings G	2½	2-56	9,000	8,838.00	9,000.00
"	Savings G	2½	2-58	10,000	9,700.00	10,000.00
"	Savings G	2½	7-58	35,000	33,845.00	35,000.00
"	Savings F	2.53	8-56	200	185.00	148.00
"	Savings F	2.53	11-58	200	172.00	148.00
Washington Gas Light Co.	Investment B	2¾	1975-80	10,000	9,925.00	10,000.00
West Shore Railroad Co.	General Mortgage	5	1960	6,000	6,540.00	6,229.00
	Guaranteed First Mortgage Reg.	4	2361	26,000	16,900.00	22,620.00
					703,099.00	705,183.25

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1954

CONSOLIDATED ENDOWMENT FUNDS (Continued)

STOCKS—PREFERRED	Description	Rate of %	Shares	Value	
				Market	Book
American Airlines	Cumulative Convertible...	3½	200	16,600.00	17,132.16
American Smelting and Refining Co.	Cumulative	7	120	19,680.00	17,496.70
American Viscose Corporation	Cumulative...	5	100	11,700.00	10,750.00
Appalachian Electric Power Co.	Cumulative	4½	100	10,900.00	10,600.00
Atchafalpa, Topeka and Santa Fe Ry. Co.	Non-cumulative	5	120	7,080.00	5,987.50
Cleveland and Pittsburgh R. R. Co.	Guaranteed	7	100	7,100.00	8,500.00
Connecticut Light and Power Co.	Cumulative	\$2.20	400	20,800.00	21,008.32
Consolidated Edison Co. of New York	Cumulative	\$5.00	300	32,400.00	32,386.17
Corning Glass Works	Cumulative	3½	240	23,040.00	24,000.00
Detroit, Hillsdale and S. W. R. R. Co.	Guaranteed	4	163	10,269.00	10,432.00
General Motors Corporation	Cumulative	\$3.75	200	20,000.00	20,000.00
"	Cumulative	\$5.00	100	12,600.00	12,525.25
General Shoe Corporation	Cumulative	\$3.50	50	4,400.00	5,180.00
Gold and Stock Telegraph Co.	Guaranteed	6	100	14,800.00	11,700.00
Gulf Power Co.	Cumulative	4.64	100	10,300.00	10,300.00

Hecht Co.	Cumulative.....	3 3/4	50	4,300.00	5,150.00
H. J. Heinz Co.	Cumulative.....	3.65	200	19,600.00	20,550.00
International Harvester Co.	Cumulative.....	7	100	17,500.00	18,204.43
Marine Midland Corporation ..	Cumulative, Par Value \$50	4 1/4	400	26,400.00	21,194.05
May Department Stores ..	Cumulative.....	\$3.75	200	18,800.00	20,700.00
McCleary Stores Corporation ..	Cumulative Convertible	3 1/2	200	17,200.00	20,670.70
Merek and Co.	Cumulative.....	\$3.50	105	9,345.00	10,497.50
Oliver Corporation ..	Cumulative Convertible	4 1/2	200	17,600.00	21,520.34
Pacific Gas and Electric Co. .	Redeemable First	4.8	1000	28,000.00	27,250.00
Panhandle Eastern Pipe Line Co.	Cumulative ..	4	200	20,400.00	20,172.40
Pennsylvania Electric Co.	Cumulative C.	3.7	200	17,600.00	20,500.00
Phizer, Chas., and Co.	Cumulative Convertible Second	4	150	16,050.00	15,225.00
Philadelphia Electric Co.	Cumulative ..	3.8	100	9,900.00	10,270.00
Potomac Electric Power Co. .	Cumulative A, Par Value \$50	3.6	304	13,072.00	15,732.00
Public Service Electric and Gas Co.	Dividend Preference	\$1.40	550	16,500.00	15,406.87
Rayonier, Inc.	Cumulative, Par Value \$25	\$2.00	400	15,200.00	13,584.11
R. J. Reynolds Tobacco Co. .	Cumulative ..	3.6	100	8,500.00	10,017.84
Rogers, George A., and Co. .	Cumulative First	\$6.00	1	100.00	100.00
Southern California Edison Co.	Cum. Conv. Preference, Par Value \$25	4.56	800	31,200.00	21,000.00
Sterling Drug, Inc.	Cumulative ..	3 1/2	200	19,000.00	20,500.00
Virginia Electric and Power Co.	Cumulative ..	\$4.04	300	30,300.00	30,681.00
				578,036.00	576,924.34

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1954

CONSOLIDATED ENDOWMENT FUNDS (Continued)

	SHARES	VALUE	
		MARKET	BOOK
STOCKS—COMMON			
Allis-Chalmers Manufacturing Co.	500	30,000.00	21,347.00
American Gas and Electric Co.	719	25,884.00	13,606.81
American Telephone and Telegraph Co.	240	40,800.00	37,539.94
Chrysler Corporation	200	12,400.00	11,500.25
Coca-Cola Co.	200	23,000.00	24,294.55
Columbian Carbon Co.	300	13,800.00	14,215.85
Commercial Credit Co.	500	21,500.00	20,163.14
Commonwealth Edison Co.	1,110	47,730.00	33,030.49
Continental Can Co.	31	2,325.00	2,371.69
Continental Illinois National Bank and Trust Co. of Chicago.	337	32,015.00	16,920.27
Continental Oil Co.	420	27,300.00	9,454.95
duPont (E. I.) de Nemours and Co.	56	7,392.00	4,907.00
Eastman Kodak Co.	315	18,270.00	13,256.25
General Electric Co.	300	12,700.00	5,405.00
General Motors Corporation	1,040	80,050.00	28,528.75
Goodyear Tire and Rubber Co.	433	30,310.00	9,433.07
International Nickel Co. of Canada, Ltd.	200	9,000.00	12,035.25
Kennecott Copper Corporation	300	24,400.00	18,237.50
Merynthal Linotype Co.	12	432.00	588.00
Monsanto Chemical Co.	200	16,800.00	18,238.51
National City Bank of New York.	57	3,021.00	4,175.13
New York Air Brake Co.	400	7,600.00	8,646.84
Phelps Dodge Corporation	400	16,000.00	7,857.25
R. J. Reynolds Tobacco Co. New Class B	100	3,700.00	5,112.50
Riggs National Bank	92	34,960.00	28,339.00
Security Storage Co.	67	6,365.00	5,058.50

Socony-Vacuum Oil Co.	1,683	74,052.00	28,430.16
Standard Oil Co. of California	66,112	42,998.00	11,796.85
Travelers Insurance Co.	40	57,200.00	16,045.68
United Gas Corporation	880	27,280.00	15,830.79
Wm. Wrigley Jr., Co.	10	840.00	707.50
		<u>749,974.00</u>	<u>447,064.47</u>

TRUST NOTES RECEIVABLE			
Crow, F. C.—Secured by 160 acres of land in Pemiscot County, Missouri.	%	Due	
\$5,954.46 each December 15 until paid in full	4	....
Kersey, A. P.—Secured by 480 acres of land in Pemiscot County, Missouri.	4	....
\$12,500 each December 15 until paid in full	4	12- 4-54	
Wollberg, Ben—Secured by lot 9, square 16	4		
		35,726.77	35,726.77
		75,000.00	75,000.00
		3,500.00	3,500.00
		<u>114,226.77</u>	<u>114,226.77</u>

REAL ESTATE	
Strong Hall—620 21st Street, NW.	207,849.00
1310 29th Street, NW. Lot 815, square 1234	10,000.00
	<u>217,849.00</u>

CASH	41,482.99
	<u>41,482.99</u>

TOTALS	2,404,667.76
	<u>2,102,730.82</u>

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1954

SCOTTISH RITE FUND

BONDS	DESCRIPTION	% DUE	VALUE		
			PAR	MARKET	BOOK
American Telephone and Telegraph Co.	Debenture.....	2¾ 1980	25,000	23,750.00	25,000.00
Lexington and Eastern Railway Co.	First Mortgage.....	5 1965	12,000	14,040.00	12,600.00
Northern Pacific Railway Co.	Prior Lien Railway and Land Grant. 4	1997	25,000	28,250.00	26,692.00
State Loan and Finance Co.	Sinking Fund Debenture.....	3¾ 1966	20,000	19,800.00	20,000.00
" " " "	Sinking Fund Subordinated Deb....	5 1960	5,000	5,000.00	5,000.00
United States of America	Treasury.....	2¼ 1959-62	72,000	72,540.00	72,170.00
"	Savings G.....	2½ 10-54	100,000	99,200.00	100,000.00
"	Savings G.....	2½ 1-55	100,000	99,200.00	100,000.00
"	Savings G.....	2½ 2-56	1,000	982.00	1,000.00
"	Savings G.....	2½ 9-62	40,000	37,880.00	40,000.00
"	Investment B.....	2¼ 1975-80	25,000	24,812.00	25,000.00
"	Treasury.....	3¼ 1983	50,000	55,421.00	50,000.00
Washington Gas Light Co.	General Mortgage	5 1960	4,000	4,360.00	4,283.00
West Shore Railroad Co.	Guaranteed First Mortgage Reg....	4 2361	14,000	9,100.00	12,355.00
				494,335.00	494,100.00

STOCKS—PREFERRED

	RATE or %	SHARES	
American Viscose Corporation	5	100	11,700.00 10,750.00
Celanese Corporation of America	4½	200	14,400.00 20,081.50
Consolidated Gas Electric Light and Power Co. of Baltimore	4	130	13,260.00 13,312.73
Dresser Industries	3¾	200	18,200.00 20,600.00
Federated Department Stores	4¼	100	10,400.00 9,895.00
General Motors Corporation	\$3.75	40	4,000.00 4,000.00
General Shoe Corporation	\$3.50	50	4,400.00 5,120.50
Goodyear Tire and Rubber Co.	\$5.00	100	10,500.00 10,960.34
Gulf Power Co.	4.64	100	10,300.00 10,300.00
Hecht Co.	3¾	150	12,900.00 15,450.00
Illinois Power Co.	4.26	400	20,800.00 20,600.00
International Harvester Co.	7	50	8,650.00 9,124.08
Montgomery Ward and Co.	\$7.00	100	17,600.00 20,535.65
Pacific Telephone and Telegraph Co.	6	200	28,800.00 31,927.37
Pfizer, Chas., and Co.	4	50	5,350.00 5,075.00
Philadelphia Electric Co.	3.8	100	9,900.00 10,270.00
Philip Morris and Co., Ltd., Inc.	4	138	12,144.00 14,007.00
Potomac Electric Power Co.	3.6	300	12,900.00 15,525.00
R. J. Reynolds Tobacco Co.	3.6	200	17,000.00 20,018.77
			245,204.00 267,552.94

ASSETS OF ENDOWMENT FUNDS (Continued)

August 3, 1954

SCOTTISH RITE FUND (Continued)

STOCKS—COMMON	SHARES	VALUE	
		MARKET	BOOK
American Telephone and Telegraph Co.	200	34,000.00	30,901.86
Cincinnati Milling Machine Co.	500	37,000.00	18,609.10
Commonwealth Edison Co.	950	40,850.00	26,428.55
Continental Oil Co.	1,000	65,000.00	15,725.25
General Electric Co.	1,200	49,200.00	17,210.00
Goodyear Tire and Rubber Co.	433	30,310.00	9,670.83
Hecht Co.	500	11,500.00	14,562.50
International Nickel Co. of Canada, Ltd.	300	13,500.00	13,032.50
Montgomery Ward and Co.	750	54,750.00	32,577.25
Riggs National Bank	150	57,000.00	32,625.00
Standard Oil of California	220½	14,333.00	2,600.00
Standard Oil of New Jersey	1072	96,480.00	37,854.29
Union Carbide and Carbon Corporation	900	71,100.00	25,122.50
United Gas Corporation	770	23,870.00	13,851.66
		598,893.00	290,771.29
CASH		4,520.53	4,520.53
		<u>1,340,952.53</u>	

TOTALS	SCOTTISH RITE FUND	1,000,000.00
	RESERVE FOR PROTECTION OF SCOTTISH RITE INVESTMENTS	56,944.76
		<u>1,056,944.76</u>

SUMMARY OF ASSETS OF ENDOWMENT FUNDS

August 31, 1954

FUNDS	Total Assets	Cash	INVESTMENTS				
			Total	Bonds	STOCKS		Trust Notes
					Preferred	Common	
Consolidated	2,102,730.82	41,482.99	2,061,247.83	705,183.25	576,924.34	447,064.47	217,849.00
Scottish Rite	1,056,944.76	4,520.53	1,052,424.23	494,100.00	267,552.94	290,771.29	
TOTALS - EXHIBIT A	3,159,675.58	46,003.52	3,113,672.06	1,199,283.25	844,477.28	737,835.76	217,849.00

ENDOWMENT FUNDS—HELD IN TRUST BY OTHERS

August 31, 1934

FUNDS	TRUSTEES	BOOK VALUE
Andrews Scholarship Fund.....	American Security and Trust Co.....	5,194.95
Fry Professorship Fund	National Savings and Trust Co.....	105,839.26
Harvey Scholarship Fund	Washington Loan and Trust Co.....	4,638.40
Sanders Fellowship Fund.....	National Savings and Trust Co.....	205,933.32
Sanders Hospital Fund	Washington Home for Foundlings	29,152.03
Sharpe School of Medicine Fund.....	National Savings and Trust Co.....	8,216.79
Spencer Scholarship Fund.....	Northern Trust Co.....	7,422.20
TOTAL—EXHIBIT A.....		<u>366,396.95</u>

ASSETS OF PLANT FUNDS

August 31, 1954

CONSOLIDATED PLANT FUNDS

	DESCRIPTION	C%	DUE	VALUE	
				PAR	MARKET
BONDS					BOOK
Federal Land Banks	Consolidated Farm Loan	2½	11-54	25,000	25,046.00
"	"	2½	5-56	50,000	50,906.00
State Loan and Finance Corporation	Sinking Fund Subordinated Debenture	5	1960	10,000	10,000.00
United States of America	Certificates of Indebtedness	1½	5-55	115,000	115,373.00
"	"	1½	8-55	40,000	40,112.00
"	Treasury Notes B	1½	12-54	134,000	134,627.00
"	Treasury	2	12-54	35,000	35,175.00
"	Savings G	2½	11-54	3,000	2,976.00
"	Savings G	2½	10-55	1,000	982.00
"	Savings G	2½	10-57	1,700	1,649.00
"	Savings G	2½	4-61	18,600	17,651.00
"	Savings F	2.53	12-57	100	88.00
					86.10
				434,535.00	433,386.10

CASH..... 12,671.61 12,671.61

TOTALS..... 447,206.61 446,057.71

LAW CENTER FUND

CASH..... 31,451.31 31,451.31

ASSETS OF PLANT FUNDS (Continued)

August 31, 1954

PAIRO FUND

	DESCRIPTION	%	DUE	VALUE	
				PAR	MARKET
BONDS					BOOK
Federal Land Banks	Consolidated Farm Loan	2½	5-56	50,000	50,000.00
Morris and Essex Railroad Co.	First and Refunding Mortgage	3½	2000	6,000	3,780.00
Southern Pacific Co. (Oregon Lines)	First Mortgage A	4½	1977	5,000	5,300.00
United States of America	Treasury	2½	1964-69	500	500.00
"	Treasury	3¼	1978-83	1,000	1,108.00
"	Savings G	2½	11-56	300	292.00
					61,886.00
					61,538.00
STOCKS - COMMON				SHARES	
American Security and Trust Co.				220	9,240.00
Mergenthaler Linotype Co.				300	10,800.00
National City Bank of New York				63	3,339.00
Pennroad Corporation				100	1,400.00
Riggs National Bank				62	23,560.00
					48,339.00
					47,734.04
Cash					277,623.56
					277,623.56
TOTALS					387,848.56
					386,895.60

SUMMARY OF ASSETS OF PLANT FUNDS

August 31, 1954

FUNDS	Total Assets	Cash	INVESTMENTS		
			Total	Bonds	Common Stocks
Consolidated Plant.....	446,057.71	12,671.61	433,386.10	433,386.10	
Law Center.....	31,451.31	31,451.31			
Pairo.....	386,895.60	277,623.56	109,272.04	61,538.00	47,734.04
TOTALS—EXHIBIT A.....	864,404.62	321,746.48	542,658.14	494,924.10	47,734.04

LAND AND BUILDINGS
For the Year Ended August 31, 1954

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1953	Net Additions	Balance August 31, 1954
Biological Sciences Building C.....	Part of 834	102	1914-35	151,129.97		151,129.97
Book Store	Part of 843	79	1949	48,105.49		48,105.49
Chapin Hall	Part of 838	79	1948	85,301.23		85,301.23
Coreoran Hall (Schedule 8A)	Part of 834	102	1919-24	327,481.92		327,481.92
Draper Hall—Part of Square 56	15-843	56	1948	50,000.00		50,000.00
Engineering School Building	15-843	56	1943		8,759.00	8,759.00
Engineering School Building Site	17-19-20-23-24		1936	94,581.28		94,581.28
Faculty Parking Lot.....	25-26-27-28-29					
	800-801-802-805					
	823-828-829-830					
	832-833-834	56				
Gymnasium	Part of 834	102	1936	188,931.05	15,000.00	203,931.05
Hall of Government	Part of 841	79	1918-38	58,331.44		58,331.44
Hospital	Entire Square	54	1945	239,035.63	2,800.00	241,835.63
Lisner Auditorium	828-838-843	79	1929-41	7,407,163.16	139,872.52	7,547,035.68
Lisner Library	Part of 834	102	1912-39	879,976.91		879,976.91
Mechanical Laboratory	Part of 834	102	1923-30	373,247.79	10,781.73	384,029.52
Monroe Hall	844	79	1928-51	57,583.87		57,583.87
Nurses Home (Schedule 8A)	806 thru 811	55	1947	621,208.50	2,800.00	624,008.50
Parking Lot 2314 I St., NW...	811	41	1945-53	401,500.00		401,500.00
Pharmacology Laboratory	27-28-816-817	79	1944	575,287.43	12,500.00	587,787.43
Physics Laboratory	Part of 843	79	1947	100,091.18		100,091.18
President's Office	Part of 834	102	1936	26,075.12		26,075.12
School of Medicine, Old Hospital (Schedule 8A)				11,700.00		11,700.00
Shop, Stockroom	43	250	1882-1932	995,706.34		995,706.34
Social Sciences Building D.....	53	101	1943	26,761.24		26,761.24
	Part of 834	102	1922-36	543,355.70	(— 50.00)	543,305.70

Sorority Hall--2112 G Street, NW.....	816	80	1948	30,000.00	30,000.00
" 2129 G Street, NW.....	805	79	1936	36,989.72	36,989.72
" 2131 G Street, NW.....	Part of 8	79	1935	25,500.00	25,500.00
" 802 21st Street, NW.....	35	77	1938	13,000.00	13,000.00
Staughton Hall.....	834-835	79	1941	62,574.67	62,574.67
Stockton Hall (Schedule 8A).....	Part of 834	102	1920-25	279,325.93	279,325.93
Student Activities Building.....	41	79	1947	75,000.00	75,000.00
Student Union Building.....	804-836	79	1947-48	526,599.63	528,057.96
Warwick Memorial Building*.....	Entire Square	39	1948-52	642,918.56	447,430.55
Welling Hall.....	15	55	1947	209,047.72	209,047.72
1,458.33					
(-195,488.21)					
G Street, NW.....	C	121	1949	20,000.00	20,000.00
" 2002.....	27	103	1949	33,600.00	33,600.00
" 2024.....	16	103	1922	14,955.00	14,955.00
" 2026.....	15	103	1929	15,074.96	15,074.96
" 2033.....	Part of 834	102	1922	32,500.00	32,500.00
" 2106.....	817	80	1937	19,000.00	19,000.00
" 2108.....	41	80	1946	31,500.00	31,500.00
" 2110.....	40	80	1949	69,479.23	69,479.23
" 2114.....	815	80	1949	47,250.00	47,250.00
" 2116.....	A	80	1946	20,500.00	20,500.00
" 2118.....	B	80	1946	17,500.00	17,500.00
" 2135.....	807	79	1943	14,000.00	14,000.00
" 2222.....	25	57	1948	8,800.00	8,800.00
" 2313-15, 17, 19, 21.....	803-829	42	1947	23,400.00	23,400.00

LAND AND BUILDINGS—(Continued)
For the Year Ended August 31, 1954

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1953	Net Additions	Balance August 31, 1954
H Street, NW 1909	800	119	1948	32,500.00		32,500.00
" 1911-13	3	119	1948	67,711.70		67,711.70
" 1921	802	119	1952	32,500.00		32,500.00
" 1923	803	119	1949	38,000.00		38,000.00
" 2011	806	101	1943	13,000.00		13,000.00
" 2020	Part of 834	102	1922	98,516.71		98,516.71
" 2023	51	101	1954		12,000.00	12,000.00
" 2025	52	101	1945	21,000.00		21,000.00
" 2027	813	101	1941	11,000.00		11,000.00
" 2029	814	101	1945	11,500.00		11,500.00
" 2031	815	101	1948	13,000.00		13,000.00
" 2037	817	101	1940	23,500.00		23,500.00
" 2111 (Schedule 8A)	802	77	1950	17,500.00		17,500.00
" 2113	804	77	1940	12,500.00		12,500.00
" 2115	805	77	1944	12,431.25		12,431.25
" 2125	808	77	1954		1,000.00	1,000.00
" 2127	809	77	1946	7,500.00		7,500.00
" 2135 (Schedule 8A)	810	77	1953		15,000.00	15,000.00
" 2136	53 thru 59	79	1951	85,000.00		85,000.00
" 2137-39	811	77	1948	15,500.00		15,500.00
" 2142	D	79	1935	1,500.00		1,500.00
" 2142½	815	79	1940	3,000.00		3,000.00
" 2209	804	55	1945	6,650.00		6,650.00
" 2211	16	55	1948	16,125.00		16,125.00
" 2213	17	55	1946	13,000.00		13,000.00
" 2215-19	18-805	55	1944	15,500.00		15,500.00
" 2300	817	42	1942	10,750.00		10,750.00
" 2308	43	42	1948	7,900.00		7,900.00
" 2312	814	42	1948	7,000.00		7,000.00
" 2316	812	42	1947	9,600.00		9,600.00

I Street, NW—2012	830	101	1945	25,000.00		25,000.00
" 2014	829	101	1945	25,000.00		25,000.00
" 2018	21	101	1946	50,000.00		50,000.00
" 2038	840	101	1942	10,000.00		10,000.00
" 2106	27	77	1947	11,800.00		11,800.00
" 2112	55-56	77	1947	12,500.00		12,500.00
" 2136	826	77	1948	15,000.00		15,000.00
" 2138	825	77	1945	5,000.00		5,000.00
" 2204	22	55	1949	12,000.00		12,000.00
New Hampshire Avenue, NW—905	813	40	1949	9,500.00		9,500.00
" 939	818	40	1953		11,000.00	11,000.00
New York Avenue, NW—1225 (Schedule 8A)	14-15	286	1954		122,500.00	122,500.00
Pennsylvania Avenue, NW—						
" 1900-02-04-06-08	12-19	119	1949	180,000.00		180,000.00
" 1914-15	812	119	1950	70,000.00		70,000.00
" 1920	813	119	1949	70,000.00		70,000.00
" 2100	800 801-840	75	1945	103,000.00		103,000.00
" 2130	831	75	1950	30,000.00		30,000.00

LAND AND BUILDINGS—(Continued)
For the Year Ended August 31, 1954

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1953	Net Additions	Balance August 31, 1954
19th Street, NW—808	20	119	1949	30,000.00		30,000.00
20th Street, NW—700	26	102	1931	17,500.00		17,500.00
" 706	23	102	1950	36,870.03		36,870.03
" 712	42	102	1929	14,240.00		14,240.00
" 714	41	102	1930	14,500.00		14,500.00
" 716	40	102	1929	13,500.00		13,500.00
" 718	828-830	102	1929	20,000.00		20,000.00
21st Street, NW—604	23	80	1946	13,000.00		13,000.00
" 606, 08	21-22	80	1935	12,500.00		12,500.00
" 713-15	Part of 834	102	1929	24,000.00		24,000.00
" 714	Part of 841	79	1931	40,000.00		40,000.00
" 716	Part of 841	79	1933	8,885.00		8,885.00
" 718	Part of 841	79	1939	16,422.00		16,422.00
" 810	31	77	1938	9,000.00		9,000.00
" 814	830	77	1944	13,000.00		13,000.00

22nd Street, NW—715	24	79	1939	8,190.00	8,190.00
" 717	25	79	1940	10,143.00	10,143.00
" 719	810	79	1952	20,000.00	20,000.00
" 725	812-813	79	1938	8,750.00	8,750.00
" 727	814	79	1937	4,750.00	4,750.00
" 731	34	79	1945	7,600.00	7,600.00
" 800-02	802-803	55	1946	18,500.00	18,500.00
" 806	800	55	1945	9,000.00	9,000.00
" 808	C	55	1946	14,000.00	14,000.00
" 810	839	55	1948	18,750.00	18,750.00
" 813	817	77	1948	10,800.00	10,800.00
" 815 17	818	77	1948	17,000.00	17,000.00
" 818	831	55	1952	25,000.00	25,000.00
" 820	830	55	1945	7,000.00	7,000.00
" 822	829	55	1947	9,250.00	9,250.00
" 909	815	75	1946	11,000.00	11,000.00
" 911	816	75	1950	12,000.00	12,000.00
" 921	821	75	1948	12,500.00	12,500.00

LAND AND BUILDINGS--(Continued)
For the Year Ended August 31, 1954

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1953	Net Additions	Balance August 31, 1954
23rd Street, NW-611-13.....	29-821	57	1948	13,500.00		13,500.00
"	822-824-825	42	1942	3,675.00		3,675.00
"	827	42	1944	7,425.00		7,425.00
"	825	42	1949	11,000.00		11,000.00
"	824	42	1942	4,500.00		4,500.00
"	819	42	1942	3,000.00		3,000.00
"	818	42	1942	17,750.00		17,750.00
"	30	40	1949	16,500.00		16,500.00
"	40	29	1953	11,440.00	16,500.00	11,440.00
24th Street, NW-737-39.....	808	42	1947			
Less Depreciation--Hospital.....				17,343,495.36	176,433.37	17,519,928.73
				300,000.00	60,000.00	360,000.00
				17,043,495.36	116,433.37	

* The University has a contingent asset represented by an option to purchase from The Washington Home for Foundlings land valued at \$55,946.00 for \$1.00 plus the fair market value, less depreciation, of the portion of the Warwick Memorial Building, deeded to The Washington Home for Foundlings, at the time of the exercise of such option. Refer to Exhibit G.

TOTAL--EXHIBIT A 17,159,928.73

TRUST NOTES PAYABLE

August 31, 1954

CUMBERLAND, HENRY A. Secured by 2135 H Street, NW. Due \$100 per month including interest at 4½%	12,858.09
EQUITABLE LIFE ASSURANCE SOCIETY Secured by Nurses Home. Due \$7,875 each May 1 and November 1 including interest at 4%	166,634.71
GARET, AMELIE S. Secured by 2111 H Street, NW. Due \$600 each January 12, April 12, July 12, and October 12. Interest 4%	3,000.00
LIBERTY NATIONAL BANK Secured by 1225 New York Avenue, NW. Due March 27, 1956. Interest 4%	76,350.00
WASHINGTON LOAN AND TRUST CO. Secured by School of Medicine Buildings. Due February 21, 1955. Interest 4%	350,000.00
Secured by Corcoran Hall and Stockton Hall. Due October 30, 1957. Interest 4%	100,000.00
TOTAL—EXHIBIT A	708,842.80

SCHEDULE 8A

EQUIPMENT

For the Year Ended August 31, 1954

	BALANCE AUGUST 31, 1953	NET ADDITIONS	BALANCE AUGUST 31, 1954
Administration	222,812.51	13,640.83	236,453.34
Book Stores	8,506.30	439.77	8,946.07
Cancer Clinic		42,218.00	42,218.00
Davis-Hodgkins House		23.00	23.00
Faculty Dining Room	2,284.48		2,284.48
Gymnasium	2,927.37		2,927.37
Hospital	1,227,892.82	17,956.52	1,245,849.34
Human Resources Laboratory	45,106.86		45,106.86
Instruction—General	170,409.09	6,141.40	176,550.49
" Law School	4,507.56		4,507.56
" School of Engineering	85,201.59	4,702.62	89,904.21
" School of Medicine	85,374.97	11,076.78	96,451.75
" School of Pharmacy	20,824.95	614.29	21,439.24
Interns' Residence	3,953.12		3,953.12

Library Books—General.....	235,086.29	15,901.77	250,988.06
" Hospital.....	2,367.22		2,367.22
" Law School.....	103,360.76	19,777.43	123,138.19
" School of Medicine.....	32,695.60	4,500.17	37,195.77
Lisner Auditorium.....	94,844.28		94,844.28
Lisner Library.....	45,560.16	297.90	45,858.06
Motor Vehicles.....	4,352.01		4,352.01
Nurses Home.....	9,710.60		9,710.60
Old Hospital.....	3,205.00		3,205.00
Strong Hall.....	18,200.00		18,200.00
Student Union.....	36,406.09		36,406.09
Welling Hall.....	30,805.34		30,805.34
	<u>2,496,394.97</u>	<u>137,290.48</u>	<u>2,633,685.45</u>
Less Depreciation Hospital Equipment.....	550,800.00	120,600.00	671,400.00
	<u>1,945,594.97</u>	<u>16,690.48</u>	
TOTAL—EXHIBIT A.....			<u>1,962,285.45</u>

RESTRICTED CURRENT FUNDS—ORGANIZED RESEARCH

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Receipts	Disbursements			Balance August 31, 1954
			Salaries	Other Expense	Total	
SCHOOL OF MEDICINE						
Abbott, Lilly, and Upjohn	8,723.96	15,000.00	12,698.75	4,059.20	16,757.95	6,966.01
American Cancer Society—CH 30		2,443.50	933.34	742.66	1,676.00	767.50
F-127-A	320.22	250.00		493.73		76.49
Ames Co.	7.68	1,680.00	213.34	1,223.51	1,436.85	250.83
Arthritis	10,266.60	22,852.31	2,241.92	12,521.77	14,763.69	18,355.22
Baxter Laboratory		4,688.46	4,275.00	413.46	4,688.46	
Burroughs-Wellcome and Co.	9.37			9.37	9.37	
Brown	2,400.00		2,400.00		2,400.00	
Alpert	966.81	50.00		105.50	105.50	911.31
Cancer Control	1,344.44			1,050.00	1,050.00	294.44
Cardiology	4.86					4.86
Cesma Chemicals	1,691.40		400.58	34.84	435.42	1,255.98
Ciba Pharmaceutical Products—Coakley	462.10			21.00	21.00	441.10
Prandon		1,800.00		267.00	267.00	1,533.00
Kleb	3,266.15	6,674.83	6,650.03	3,290.95	9,940.98	
Commercial Solvents Corporation	5,271.45	(-866.63)	3,075.00	1,279.26	4,354.26	50.56
Damen Ranson Memorial—DRIR-42-C		6,666.63	1,900.00	1,309.59	3,209.59	3,457.04
DRIR-42-D	500.00					500.00
Davis and Geck	2,000.02	(-130.01)	1,878.31	52.30	1,930.61	1,350.00
D. C. Tuberculosis Association		2,100.00	400.00	350.00	750.00	1,000.00
Freeman Drug Co.	1,000.00					4,000.00
Freeman, Keen, Memorial		4,000.00				476.00
Fuller, Anna	376.00	100.00				965.15
Hodgkins Disease	1,254.65					
Hoskins, Helen F.	3,459.36	8,882.50	5,683.68	289.50	289.50	4,687.90
Institute for the Study of Analgesic and Sedative Drugs				1,970.28	7,653.96	
International Collaboration Products	9.26			9.26	9.26	

[illegible]

RESTRICTED CURRENT FUNDS—ORGANIZED RESEARCH—(Continued)

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Receipts	Disbursements			Balance August 31, 1954
			Salaries	Other Expense	Total	
School of Medicine (Continued)						
United States Public Health Service						
E-43-C5	1,533.28	(-233.69)	1,041.69	257.90	1,299.59	
A-66-C	4,439.30	3,101.52	7,433.30	107.52	7,540.82	
A-66-C2		5,152.52	1,539.82	740.00	2,279.82	2,872.70
H-130-C4	3,450.39	(-448.85)	1,524.00	1,477.54	3,001.54	
RG-300-CR	.17	(-.17)				
G-200-C2		594.00		44.00	44.00	550.00
C-308-C5	43.41	(-36.48)		6.93	6.93	
C-308-C6	2,809.40	4,912.43	5,786.50	1,935.33	7,721.83	
C-308-C7		10,908.00	1,800.00	808.00	2,608.00	8,300.00
E-314-C	1,964.21	(-13.22)	1,024.62	926.37	1,950.99	
E-314-C2		9,465.00	1,278.72	1,643.28	2,922.00	6,543.00
A-408		6,151.00	2,845.00	3,041.05	5,886.05	264.95
A-408-C		2,500.00				2,500.00
B-629		5,478.00				5,478.00
RG-631-C6	1,554.59	1,404.28	1,640.00	1,318.87	2,958.87	
E-697		2,130.00	750.00	504.40	1,254.40	875.60
H-1170-C	901.89	2,465.08	3,299.94	67.03	3,366.97	
H-1170-C2		8,698.00	2,010.33	1,772.31	3,782.64	4,915.36
H-1449	3,025.31		1,000.00	2,025.31	3,025.31	
H-1739		3,680.00	1,200.00	478.08	1,678.08	1,921.92
C-2046-R		895.00	525.00	370.00	895.00	
C-2326		12,575.00	1,230.00	931.00	2,161.00	10,412.00
RG-3052		52,624.00	3,514.99	4,058.00	7,572.99	45,051.01
WT-5011-R2	411.81	(-111.81)	300.00		300.00	
WT-5011-C	996.27	(-246.03)		750.24	750.24	
		25,000.00	11,653.17	12,539.55	24,192.72	807.28

Item	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
Washington Heart Association—2	11,975.72	9,341.04	(-715.62)	10,155.48	1,780.34	3,780.34	3,780.34	5,561.60	
White Laboratories	320.37	6,985.62	2,633.32	2,718.00	926.00	11,240.10	11,240.10	4,026.30	
Whitehall Pharmaceutical Co.		1,000.00	243.00	800.00	317.89	317.89	317.89	2.48	
		2,100.00			580.13	1,380.13	1,380.13	719.87	
American Cancer Society—D. C. Division 10	144,528.58	414,192.56	188,055.22	132,484.97	320,540.19	218,180.95	218,180.95		
Instr-24-E	1,681.29	14,982.43	11,622.23	1,360.20	14,982.43				
Instr-24-F		25,000.00	15,799.92	4,544.45	1,681.29				
American Heart Association		985.00	375.00	187.50	20,344.17			4,655.63	
George Washington University Cancer Clinic	38,705.81	72,754.51	31,594.11	39,945.15	562.50			362.50	
Leiderle Laboratories - Bateman	6,707.90	12,000.00	9,726.19	1,390.80	71,529.26			39,931.06	
Medical Research Foundation	1.50	1,200.00		1.50	11,116.99			7,590.91	
National Research Council									
Pharm, Chas. and Co. - Bateman									
Stewart—1 Kloppe	4,208.48		3,629.98	535.99	4,165.97			1,200.00	
2 - Bateman	22,729.64	25,000.00	17,196.62	9,153.41	26,350.01			42.51	
United States Navy—Nunr-761-01	219.22			69.24	69.24			21,379.61	
United States Public Health Service—H-142-C3		7,492.61	6,193.28	1,269.33	7,492.61			169.98	
H-142-C4		(-2,320.77)	320.11	330.57	650.68				
C-391-C5	3,171.45	14,847.00	9,112.12	4,414.10	13,526.22			1,320.78	
C-391-C6	4,196.51	(-3,908.54)	225.00	62.97	287.97				
C-517-C5		4,000.80	2,340.00	2,260.80	4,600.80				
CI-517-C6	8,320.83	(-519.09)	7,479.29	322.45	7,801.74				
H-1034-C	1,901.86	25,000.00	14,792.78	1,979.49	16,772.27			8,227.73	
C-1234-C2	1,146.18	(-3,746.06)	1,000.00	126.72	1,126.72				
H-1747		4,206.00	2,050.00	680.98	2,730.98			1,475.02	
C-1949		415.00		415.00	415.00				
C-1949-C	2,788.50		2,073.50	715.00	2,788.50				
		4,900.00	1,375.00	714.92	2,089.92			2,810.08	

RESTRICTED CURRENT FUNDS—ORGANIZED RESEARCH (Continued)

For the Year Ended August 31, 1954

FUNDS	Balance August 31, 1953	Receipts	Disbursements			Balance August 31, 1954
			Salaries	Other Expense	Total	
CANCER (Continued)						
United States Veterans Administration—V1001M-3210		7,606.38	5,930.52	1,675.86	7,606.38	
Washington Heart Association—1	1,419.02	10,130.70	6,228.48	3,902.22	10,130.70	
		1,500.00	1,388.09	197.51	1,585.60	1,333.42
	99,218.19	221,806.51	152,452.22	78,113.25	230,565.47	99,519.23
ARTS AND SCIENCES						
Cooper Psychological	82.44	5,000.00	1,470.70	43.79	43.79	38.65
National Science Foundation—NSF-C921	925.60			761.28	2,231.98	3,668.02
Research Corporation—Sager—1	3,200.00		450.00	3,901.86	2,766.49	925.60
		7,930.66	4,028.80	1,477.09	7,930.66	523.51
United States Air Force—AF-18-600-1180		1,427.09		825,817.06	1,968,750.26	
United States Army		1,568,750.26	1,142,933.20	130,567.47	235,726.61	
DA-44-109-GM-680		235,726.61	105,169.14	18,037.05	27,588.70	
DA-18-004-CMIL-2307		27,588.70	9,551.65	5,333.34	9,000.00	
DA-18-108-CMIL-3000		9,000.00	3,606.66	1,241.35	4,946.35	
DA-01-021-ORD-45-04		3,446.50	3,728.00	1,092.84	8,359.44	
United States Atomic Energy Commission—AT-30-1-821	2,364.25	8,359.44	6,366.80	124,254.25	347,047.40	844.40
United States Navy		347,047.40	222,793.15	14,793.65	34,210.68	
Near-168-00		34,210.68	19,417.03	697.80	2,054.80	
N7-001-419-04		2,141.28	1,357.00	632.83	632.83	
N7-001-419-06		632.83		500.96	3,790.65	
N00p-644		3,075.40	3,329.69	3,329.69	1,277.60	
N00p-672						
N00p-1021-00						
N00p-1060-00						

a	No0221s 2691	979.34	604.00	285.34	979.34
	No0221s 2891	4,020.07	3,700.00	320.07	4,020.07
	No0221s 9951	53,318.40	17,913.36	35,485.04	53,318.40
	No0221s 13741	11,483.81	7,500.00	3,983.81	11,483.81
	No0221s 57417	17,784.62	11,458.24	6,326.38	17,784.62
United States Department of State 1A-359					
o	United States Information Agency-1A-W-334	6,793.63	3,025.50	3,768.13	6,793.63
		2,683.50	2,573.99	109.51	2,683.50
		6,662.29	1,572,168.71	1,182,757.99	2,754,926.70
ENGINEERING					
a	National Science Foundation-NSF-C284 United States Army-DA 22 079 eng-141 DA-49-018 eng-830	4,198.06	2,799.14	781.54	617.38
		40,210.78	24,681.65	15,529.13	40,210.78
		5,024.43	1,894.38	3,130.05	5,024.43
o		4,198.06	29,375.17	19,440.72	617.38
PHARMACY-PROPRIETARY ASSOCIATION					
o		679.36		151.51	528.35
TOTALS-EXHIBIT C					
		255,286.98	1,435,665.35	1,412,948.44	335,952.57

RESTRICTED CURRENT FUNDS—INVESTMENT INCOME
For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Net Income for Year	Disbursements		Balance August 31, 1954
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Schedule 12)					
UNRESTRICTED					
Acker		14.60	14.60		
Alumni		34.40	34.40		
Campaign		9,076.00	9,076.00		
Corcoran		10,700.00	10,700.00		
Davis		2,020.40	2,020.40		
Durst		97.20	97.20		
Goddard		1,633.00	1,633.00		
Haggett		48.60	48.60		
King		933.90	933.90		
Pooler		48.60	48.60		
Reichelderfer		729.00	729.00		
Sanders		102.50	102.50		
Sothern		243.00	243.00		
Subscription Gifts		608.80	608.80		
Syms		72.90	72.90		
Teller		6,657.00	6,657.00		
Trustees		76.00	76.00		
Walsh		3.00	3.00		
Wellbell		486.00	486.00		
Willard Association		48.60	48.60		
Withers		1,307.00	1,307.00		
Woodhull		2,430.00	2,430.00		
SCHEDULE 1.....			37,370.50		

Restricted Fellowship	King	9,168.20	3,660.60			12,828.80
"	Miller		246.05			246.05
"	Sanders	1,494.36	9,358.39	10,785.70		67.05
Professorship—Alumni						
"	Carroll	355.41	40.30	40.30		
"	Congressional		24.30			
"	Depew		7,713.30	7,713.30		379.71
"	Fulton		8,290.80	8,290.80		
"	Fry (2 Funds)		705.10	705.10		
"	Yulee	4,599.96	8,225.82	6,900.00	1,325.82	
Law School—Altizer			243.00			4,842.96
			6.00	6.00		
School of Government—Rankin			13,593.70	13,593.70		
"	Scottish Rite		50,111.83	50,111.83		
School of Medicine—Bartsch-Dunne			147.60	147.60		
"	Borden		180.20	180.20		
"	Collins		137.40			
"	Cooper	861.91	486.00			999.31
"	Eppley	8,248.73	48.60	48.60		8,734.73
"	Gardner		218.00	218.00		
"	Lewis		1,781.47	1,781.47		
"	Ruffin		2,794.00	2,794.00		
"	School of Medicine		518.00	518.00		
"	Sharpe		327.83	327.83		
School of Pharmacy—Gibbs			486.00	486.00		
Miscellaneous—Graduate			714.40	713.97	.43	
"	Howard	259.21	176.00			435.21
SCHEDULE I				105,362.40		

RESTRICTED CURRENT FUNDS—INVESTMENT INCOME (Continued)

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Net Income for Year	Disbursements		Balance August 31, 1954
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued)					
RESTRICTED (Continued)					
Hospital Bureau		172.00	172.00		.35
• Cancer Clinic		.35			
• Chapman		59.60	59.60		
• Cepkane		48.60	48.60		
• General		65.00	65.00		
• Haver		121.50	121.50		
• Kaufman		26.20	26.20		
• Kimmel		149.30	149.30		
• Kohnst		68.40		68.40	
• Mahoney		83.60	83.60		
• National Park Seminary		24.50	24.50		
• Repland		24.50	24.50		
• Strong		729.00	729.00		
• Tree		486.00	486.00		
• Women's Board		262.40		262.40	
• Woodbury		486.00	486.00		
			2,475.40		
SCHEDULE I					
Library	17.32	8.50			25.82
• Gladstone		9.70			9.70
• Henry	23.63		23.63		2,352.18
• Howard	1,911.91	486.00	45.73		307.75
• Meyer	259.15	48.60			1,763.30
• Noyes	1,682.31	486.00	405.01		1,020.43
• Swisher	917.43	103.00			
				474.37	

Scholarship - Andrews	346.72	215.44	180.00	410.15
Bartsch	679.06	973.60	680.00	
Transferred to Bartsch-Dunne Fund				
Carr	6,980.89	2,362.40	3,140.00	680.00
Carter, H. H.	1,098.81	243.00	400.00	6,203.29
Carter, M. M.	329.77	48.60	100.00	1,841.81
Columbian Women Funds				278.37
Brown				
Chamberlin	56.64	58.30	56.64	58.30
College Women's	108.56	111.80	108.56	111.80
Foundation of Columbian Women	21.60	24.30	21.60	24.30
Herrin	236.00	243.00	236.00	243.00
Knap	236.00	243.00	236.00	243.00
McWilliam	236.00	243.00	236.00	243.00
Wilson		13.60		13.60
Davis	47.20	48.60	47.20	48.60
D C - D A R	184.95	48.60	60.00	173.55
Dorey	344.57	399.70	350.00	394.27
Farnham	726.12	475.30		1,200.76
Fisher	219.77	48.60	70.00	198.37
Hampel		42.00		42.00
Harey	87.15	24.30		111.65
Haxton	52.26	177.12	100.00	129.48
Kendall	597.82	243.00	200.00	640.82
Mercer	280.00	289.70	280.90	289.70
Mercer	509.65	72.00	150.00	432.55
Pearson	593.84	138.00	200.00	531.84
Powell	18,815.60	2,430.00		21,245.60
Shepard	1,461.45	486.00	600.00	1,547.45
Spencer	355.49	121.77	150.00	327.26
Stone	700.93	97.20		858.13
Swisher	300.00	645.00	390.00	400.00
Walker	1,009.42	121.50	250.00	970.92
Washington	366.35	95.00	128.00	336.35
Woodhull	121.06	29.20	50.00	102.26
Scholarships Awarded			8,389.90	

RESTRICTED CURRENT FUNDS—INVESTMENT INCOME (Continued)
For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Net Income for Year	Disbursements		Balance August 31, 1954
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued)					
RESTRICTED FUNDS (Continued)					
Price Bureau	175.80	48.60	75.00		149.40
• Coates	187.21	145.80	150.00		183.01
• Crockett	74.73	48.60	50.00		73.33
• Carter	119.29	48.60	60.00		107.89
• Davis	262.99	34.00	60.00		176.99
• Egan	286.65	145.80	150.00		282.45
• Evans	93.96	58.30	60.00		91.74
• Finch	222.44	48.60	75.00	.52	196.04
• Gifford	516.44	268.20	300.00		484.64
• Hubbard	114.15	48.60	60.00		102.75
• Lerner	125.10	39.00	20.00		144.10
• Mahler	637.69	4.90	300.00		342.59
• Orbach	64.87	24.30			89.17
• Rosen	164.87	24.30			189.17
• Stachurski	40.33	14.60	12.25		42.68
• Stewart	334.77	48.60			383.37
• Walsh	404.64	48.60			453.24
• Wetzel	661.27	243.00	350.00		554.27
PRIZES AWARDED					
		163,950.46	1,722.25		

PRIZES AWARDED
WIDOWMENT NET INCOME

PLANT FUNDS (Schedule 13)

Davis-Hodgkins House Equipment

Field House

Patio (income used for athletics)

School of Engineering Building

School of Medicine Building

Women's Activities Building

Seizures 1

RESTRICTED CURRENT FUNDS (Schedule 10B)

Patent, Trade Mark and Copyright Foundation

TOTALS—EXHIBIT C

	5.30		5.30
	13.25		13.25
	162,306.04	162,306.04	
	17,059.13		17,059.13
	85.60		85.60
	243.90		243.90
		162,306.04	
	1,411.78		1,411.78
	72,475.51	318,100.86	21,057.10
			78,393.01

RESTRICTED CURRENT FUNDS—MISCELLANEOUS
For the Year Ended August 31, 1954

FUNDS	Balance August 31, 1953	Additions		Deductions	Balance August 31, 1954
		Gifts	Other		
Scholarships, Fellowships					
Alpha Zeta Omega Pharmaceutical Fraternity	500.00	1,050.00		Scholarships 489.00	11.00
American Foreign Service Association	400.00			" 1,019.00	31.00
American Foundation Pharmaceutical Education	100.00	100.00		" 400.00	
American Society of Women Accountants		135.00		" 100.00	100.00
Anonymous		100.00		" 135.00	
Chi Omega Alumnae Association		500.00			160.00
Chaves Foundation		250.00			500.00
Colonia Foundation		550.00		Scholarships 250.00	
Colony of Women		500.00		" 550.00	
D C Pharmaceutical Association	400.00			Scholarships 476.00	500.00
Dorsey, Charles W.		500.00		" 500.00	4.00
General Electric Co.		500.00		" 75.00	
Kappa Alpha Theta Society	150.00			" 100.00	75.00
Kappa Psi Fraternity		100.00			
Kappa Sigma Fraternity		1,200.00			1,200.00
Lehigh Libraries		2,500.00		Scholarships 2,500.00	2,500.00
Meyer Foundation	2,500.00	200.00		" 200.00	
Montgomery County Education Association		863.56		" 200.00	863.56
Parish County Association	200.00				950.00
President's	950.00			Scholarships 750.00	750.00
Seaside Club	750.00	750.00		" 250.00	
W and L Ford Store		250.00		" 425.00	
Windsor Foundation		425.00		" 300.00	
Zonta Club		300.00			
Law School—Patent, Trademark, Copyright Foundation	64,663.83	40,485.00	1,411.75	T. Schedule 1 8,708.82	97,849.79
" " Public Law Library Harryman House	930.84			T. Schedule 12 930.84	
" " Sloan Foundation	7,150.59			T. Schedule 1 7,150.59	
Speech—Speech Clinic Foundation	51.05	500.00		T. Schedule 1 173.89	377.16

RESTRICTED CURRENT FUNDS—AGENCY
For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Deposits	Withdrawals	Balance August 31, 1954
Flower Fund	99.35		7.50	91.85
Leong Chin Ngen	4,000.00	2,200.00	5,600.00	600.00
R.O.T.C.	69.83	140.79	142.87	67.75
Women's Board of the Hospital Women's Board Courier	1,040.08	6,642.50	7,156.76	525.82
Women's Board Gift Shop Transferred to Schedule 12—Women's Board Hospital Fund	13,819.55	28,336.05	19,590.68	
Women's Board Memorial Fund Transferred to Schedule 12—Women's Board Hospital Fund	115.00	61.00	14,000.00	8,564.92
TOTALS—EXHIBIT C	19,143.81	37,380.34	46,673.81	9,850.34

CHANGES IN PRINCIPAL OF LOAN FUNDS

For the Year Ended August 31, 1954

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Funds	Balance August 31, 1953	Additions		Deductions		Balance August 31, 1954
		Gifts	Interest on Loans	Transferred to Schedule 10	Refunded to U. S. Government	
D. C. - D. A. R.	90.40					90.40
Harris	400.00			400.00		
Home Economics	382.35					382.35
Kellogg	18,363.92		535.60			18,899.52
Law Association	822.42		80.73			903.15
Pfizer	1,000.00					1,000.00
Schoenfeld		1,067.00				1,067.00
School of Medicine	1,140.78	86.64				1,227.42
Sutherland	1,320.00					1,320.00
University	8,374.66		111.62			8,486.28
War.	5,248.47				253.10	4,995.37
TOTALS - Exhibit D	37,183.00	1,153.64	678.25	400.00	253.10	38,361.79

SCHEDULE 11

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Additions		Deductions	Balance August 31, 1954
		Gifts	Investment Income	Other	
UNRESTRICTED					
Acker	300.00				300.00
Alumni	682.00				810.00
Caplan	186,750.00	128.00			186,750.00
Carleton	220,156.00				220,156.00
Davis	41,571.00				41,571.00
Dorst	2,000.00				2,000.00
Goodard	33,602.00				33,602.00
Hazlett	1,000.00				1,000.00
Kling	19,216.00				19,216.00
Paine	1,000.00				1,000.00
Reubens	15,000.00				15,000.00
Sanders	2,110.00				2,110.00
Southern	5,000.00				5,000.00
Silverman Gifts	12,526.00				12,526.00
Sym	1,500.00				1,500.00
Teller	136,978.00				136,978.00
Trustees	1,565.00				1,565.00
Wash		100.00			100.00
Wells	10,000.00				10,000.00
Wesleyan Association	1,000.00				1,000.00
Woods	26,892.00				26,892.00
Woodward	50,000.00				50,000.00

RESTRICTED

FELLOWSHIP

King	75,322.00					75,322.00
Miller						10,000.00
Sanders						
Net loss on sale of investments	205,977.38				44.06	205,933.32

PROFESSIONSHIP

Alumni	830.00					830.00
Carroll	500.00					500.00
Constitutional	158,710.00					158,710.00
Dejew	170,592.00					170,592.00
Fluon	14,509.00					14,509.00
Fry	34,056.79				1,323.82	35,382.61
Fry (controlled by National Savings and Trust Co.).	106,061.45					
Net loss on sale of investments					222.19	105,839.26
Yulee	5,000.00					5,000.00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Additions			Deductions	Balance August 31, 1954
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
LAW SCHOOL—Altzer		1,000.00				1,000.00
SCHOOL OF GOVERNMENT						
Raskin	279,705.00					279,705.00
Scottish Rite	1,000,000.00					1,000,000.00
SCHOOL OF MEDICINE						
Bartich-Denno	3,036.76					
Income of Bartich Scholarship Fund			292.66			
Barden	3,707.00					3,329.42
Carron	2,828.00					3,707.00
Cropper	10,000.00					2,828.00
Eggers	1,000.00					10,000.00
Gardner	4,487.00					1,000.00
Lewis	32,299.00					4,487.00
Raffin	57,487.00					32,299.00
School of Medicine	10,171.00					57,487.00
Sharp	8,216.79	835.00	9.39			11,171.00
SCHOOL OF PHARMACY—Gibbs	10,000.00					8,216.79
						10,000.00

Hospital	2,500.00	1,500.00		4,000.00
Barton		10.00		10.00
Cancer Clinic	1,226.00			1,226.00
Chapman	1,000.00			1,000.00
Clephane	1,215.00	230.00		1,445.00
General	2,500.00			2,500.00
Hoover		1,000.00		1,000.00
Kauffman	3,072.00		68.40	3,072.00
Kimrod	1,408.19			1,476.59
Knightbank	1,000.00	1,000.00		2,000.00
Maloney	500.00			500.00
National Park Seminary	500.00			500.00
Reinhardt	15,000.00	29,152.03		29,152.03
Sabiers	10,000.00			10,000.00
Strong				
Tice				
Women's Board			262.40	14,438.40
Transferred from Schedule 100				10,000.00
Woodbury	10,000.00	14,176.00		
Liberty				
Cladstone	175.00			175.00
Henny	255.00			
Transferred to Schedule 13			55.00	200.00
Howard	10,000.00			10,000.00
Meyer	1,000.00			1,000.00
Nova	10,000.00			10,000.00
Schooler National University				
National University merger			1,500.00	1,500.00
Swaber	2,120.75		.25	2,121.00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Additions			Deductions	Balance August 31, 1954
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
SCHOLARSHIP						
Andrews	5,194.03		.92			5,194.95
Bartsch	20,034.00					20,034.00
Carr	48,609.00					48,609.00
Carter, H. H.	5,000.00					5,000.00
Carter, M. M.	1,000.00					1,000.00
Columbian Women Funds						
Brown	1,200.00					1,200.00
Chamberlin	2,300.00					2,300.00
College Women's	500.00					500.00
Founders of Columbian Women	5,000.00					5,000.00
Herron	5,000.00					5,000.00
Knapp	5,000.00					5,000.00
McWilliam		1,000.00				1,000.00
Wetzel	1,000.00					1,000.00

Davis					1,000.00				1,000.00
D C D A R					8,225.00				8,225.00
Dorsey					8,000.00				
Transferred from Schedule 10B									
Farnham					1,000.00				10,159.00
Fisher					503.93			930.84	1,000.00
Hampel					500.00		42.00		905.93
Harvey					4,631.97				500.00
Hazelton					5,000.00				4,638.40
Kendall					5,000.00		6.43		5,000.00
Morhouse					1,500.00				5,960.00
Pearson					2,840.00				1,500.00
Powell					50,000.00				2,840.00
Shepard					10,000.00				50,000.00
Spencer					7,434.20				10,000.00
Loss on sale of investments									
Stone					2,000.00			12.00	7,422.20
Swisher					13,132.75				2,000.00
Walker					2,500.00	251.20	245.00		13,630.95
Withington					1,954.00				2,500.00
Woodhull					600.00				1,954.00
									600.00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1954

Funds	Balance August 31, 1953	Additions			Deductions	Balance August 31, 1954
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Patux						1,000.00
Burns	1,000.00					1,000.00
Cowles	3,000.00					1,000.00
Crossant	1,000.00					1,000.00
Cotter	1,000.00					1,000.00
Davis	700.00					700.00
Feary	3,000.00					3,000.00
Evans	1,200.00	234.48	.52			1,435.00
Fitch	1,000.00					1,000.00
Goffard	5,519.00					5,519.00
Hallard	1,000.00					1,000.00
Larner	800.00					800.00
Mahler	100.00					100.00
Ordnant	5,000.00					5,000.00
Ruggles	500.00					500.00
Seagrifton Flinn	500.00					500.00
Sterrett	300.00					300.00
Switzer	1,000.00					1,000.00
Walsh	1,000.00					1,000.00
Weddell	5,000.00					5,000.00

MISCELLANEOUS

Graduate

Howard

14,546.57
3,620.00

264.00

.43

14,811.00
3,620.00

RESERVE FOR PROTECTION OF INVESTMENTS

Consolidated Endowment Funds

Gain on sale of investments

Scottish Rite Fund

Gain on sale of investments

85,861.97

55,820.14

2,066.95

1,124.62

87,928.92

56,944.76

TOTALS - EXHIBIT F

1,456,418.28

62,110.21

2,254.88

5,022.41

333.25

3,526,072.53

CHANGES IN PRINCIPAL OF PLANT FUNDS

For the Year Ended August 31, 1954

Fund	Balance August 31, 1953	Additions			Deductions	Balance August 31, 1954
		Gifts	Investment Income	Other		
PLANT ADDITIONS						
Davis-Hodgkins House Equipment.....	135.30		\$.30		23.00	117.60
Equipment purchased						
Field House.....	208.77	200.00	13.25			422.02
Grant Memorial.....		500.00				500.00
Hill Burton.....		16,535.45			16,535.45	
Construction of Warwick Memorial Building.....						
Hospital Equipment.....						
Cancer Clinic.....		220.00				220.00
Cardiac Clinic.....		200.00				200.00
Physical Medicine.....	1,245.00	250.00				
Transferred from Hospital Surplus—Exhibit B.....				791.18		
Equipment purchased						
Prenatal Nursery.....	100.00	395.00			1,433.30	852.88
Equipment purchased					392.09	102.91
Obstetrics and Gynecology Out-Patient Department.....		1,400.00			120.69	1,279.31
Equipment purchased		500.00				500.00
Surgery Department.....	2,215.00	20.00			232.00	2,003.00
Women's Board Gift Shop.....						
Equipment purchased						
Law Center.....	9,100.01	66,793.60			44,442.30	31,451.31
Transferred to Schedule 1.....						
Literary Books.....						
American Diplomatic History.....	64.00				18.00	46.00
Books purchased						
Brooklyn Alumni Club.....	405.50					405.50
Chase.....	50.00					50.00
Class of 1945.....	58.75					58.75
Council of Religious Organizations.....	325.66					
Books purchased.....					15.10	310.56
Dr. Harry C. Allen.....	25.00					25.00
Allen.....	1,000.00					1,000.00

GIFTS AND GRANTS

For the Year Ended August 31, 1954

CURRENT FUNDS

UNRESTRICTED—SCHEDULE 1—National Radio Institute

RESTRICTED—GENERAL—SCHEDULE 1		
Alumni Office—General Alumni Association	100.00	
Columbia College—National Association of Educational Broadcasters	438.01	
Law Library—J. L. Wadsworth	2.00	
Law School—Ford Law Institute	1,000.00	
		1,540.01

RESTRICTED—HOSPITAL—SCHEDULE 1—various donors

1,922.46

3,435,665.35

500.00

100.00

438.01

2.00

1,000.00

1,540.01

1,922.46

3,435,665.35

500.00

100.00

438.01

2.00

1,000.00

1,540.01

1,922.46

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RESTRICTED		228.00
Fellowship—Miller Fellowship Fund—Request of Robin Miller		
Law School—Altizer Law School Fund—Bertha E. M. Altizer		
School of Medicine—School of Medicine Endowment Fund—various donors		
Hospital		
Barton Hospital Fund—Grace C. Barton	1,500.00	
Carter Conv. Hospital Fund—Mr. and Mrs. V. A. Klein	10.00	
General Hospital Fund—various donors	280.00	
Kaufman Hospital Fund—Symon H. Kaufman	1,000.00	
Manney Hospital Fund—Manney Concrete Co.	1,000.00	
Sawyers Hospital Fund—Request of Beatrice L. Sanders	29,152.03	
Women's Board Hospital Fund—Women's Board of the Hospital	14,176.00	47,068.03
Scholarship		
Dorsey Scholarship Fund—Harryman Dorsey	1,227.50	
M. Wilson Scholarship Fund—Constance M. Wilson	1,000.00	
Swisher Scholarship Fund—Estate of Charles Clinton Swisher	253.20	
Prize—Evans Memorial Award Fund—Mr. and Mrs. Joshua Evans	1,227.50	2,480.70
Miscellaneous—Graduate Endowment Fund—various donors	234.48	
	264.00	61,882.21
PLANT FUNDS (Schedule 13)		
Field House Fund—Edgemont Land Co.		
Grace Memorial Fund—General U. S. Grant and		
The Barton Fund—United States Government		
Hospital Equipment Fund		
Carter Clinic—various donors		
Cardiovascular Department—Eugene Welsh	220.00	
Chemistry and X-ray Department—various donors	200.00	
Physical Medicine—Stacy Taylor	1,400.00	
Physiology—Stacy Taylor	250.00	
Preventive Medicine—Verna W. Hackett	398.00	
Surgery Department—Lewis Scott	500.00	
Women's Board Gift Shop—Faculty Women's Board	20.00	
Law Center Fund—various donors		
Library Book Fund—Carolina George Fund—various donors	25.00	
John Davis Price Fund—Navy and Marine Post Graduate Law Students	65.00	
Phi Alpha Delta Law Library Fund—Phi Alpha Delta Fraternity	10.00	
School of Engineering Building Fund—Charles H. Thompson Co.	29,671.63	
Charles H. Thompson Co.	9,000.00	
H Street Building Corporation	9,678.25	
School of Medicine Building Fund—1953 School of Medicine Senior Class		
Warwick Memorial Building Fund—Washington Home for Foundlings		
Warwick Memorial Equipment—Washington Home for Foundlings (Exhibit C)		
TOTAL		305,964.81
		3,907,446.97

DESCRIPTION OF LOAN FUNDS

August 31, 1954

DISTRICT OF COLUMBIA D. A. R. LOAN FUND—Created in 1938 from income of the D. C.—D. A. R. Endowment Fund. To be loaned to descendants of patriots of the American Revolution	90.40
HOME ECONOMICS LOAN FUND—Created in 1940 by the D. C. Home Economics Association to be loaned to senior girls majoring in home economics	382.35
KELLOGG LOAN FUND—Created in 1942 by the W. K. Kellogg Foundation to be loaned to students of the School of Medicine	18,899.82
LAW ASSOCIATION LOAN FUND—Created in 1941 by the George Washington Law Association to be loaned to students of the Law School	853.15
PIZZER LOAN FUND—Created in 1953 by Chas. Pizer and Co., Inc., to be loaned to students of the School of Medicine	1,000.00
SCHOENFELD LOAN FUND—Created in 1953 by various donors as a memorial to Benjamin Schoenfeld, to be loaned to students in the School of Pharmacy	1,067.00
SCHOOL OF MEDICINE LOAN FUND—Created in 1952 by School of Medicine students to be loaned to students of the School of Medicine	1,227.42
SUTHERLAND LOAN FUND—Created in 1941 by Rose L. Sutherland and other donors, to be loaned to students of the School of Medicine	1,360.00
UNIVERSITY LOAN FUND—Created in 1928 by the University to make short time loans for educational purposes	8,486.28
WAR LOAN FUND—Created in 1942 by the United States Government to be loaned to students in technical and professional fields of national defense	4,995.37

DESCRIPTION OF ENDOWMENT FUNDS

August 31, 1954

UNRESTRICTED FUNDS

ACKER FUND—Request of George N. Acker, M. D., received in 1924, the income to be used as required	300.00
ALUMNI ENDOWMENT FUND—Created by the Class of 1920, to be added to by succeeding graduates, the income to be used as required.	810.00
CAMPAIGN FUND—Created in 1923 by various donors, the income to be used as required	186,750.00
CORCORAN FUND—Gift of William W. Corcoran of \$112,000 and gifts of other donors between the years 1871-86, the income to be used as required	220,156.00
DAVIS FUND—Request of Harry C. Davis, received in 1946, the income to be used as required.	41,571.00
DURST FUND—Created in 1953 by Dr. Sidney C. Durst in memory of his wife, Clara Saunders Durst, the income to be used as required	2,000.00
GODDARD ENDOWMENT FUND—Request of Frederick J. Goddard, received in 1949, the income to be used as required.	33,602.00
HAGGETT FUND—Created in 1941 by Isabelle Barnes Haggett, the income to be used as required	1,000.00
KING, W. B., FUND—Created in 1941 by William B. King, the income to be used as required	19,216.00
POOLE FUND—Request of George Poole in 1951, the income to be used as required.	1,000.00
REICHELDERFER FUND—Created by Mary M. Reichelderfer in 1945 in memory of her husband, Luther H. Reichelderfer, the income to be used as required.	15,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1954

UNRESTRICTED FUNDS (Continued)

SANDERS ENDOWMENT FUND—Created by J. Sanders in 1945, the income to be used as required.....	2,110.00
SOTHERN FUND—Bequest of Julia Marlowe Sothern, received in 1951, the income to be used as required.....	5,000.00
SUBSCRIPTION GIFTS FUND—Created by various donors during the years 1845-51, the income to be used as required. (Formerly called the Poindexter Endowment Fund)	12,526.00
SYMS FUND—Bequest of Samuel Syms in 1891, the income to be used as required.....	1,500.00
TELLER FUND—Created in 1949 by bequest of John D. Teller and added to by Mary L. Teller, the income to be used as required.....	136,978.00
TRUSTEES FUND—Created by the Board of Trustees of the University in 1932, the income to be used as required.....	1,565.00
WALSH FUND—Created in 1954 by John E. Walsh, the income to be used as required.....	100.00
WEDDELL FUND—Created in 1948 by bequests of Alexander W. Weddell and Virginia Chase Weddell, the income to be used as required.....	10,000.00
WILLARD ASSOCIATION FUND—Gift of the Willard Association in 1950, the income to be used as required.....	1,000.00
WITHERS FUND—Gift of John Withers of \$17,000 and gifts of various donors during the years 1851-70, the income to be used as required. (Formerly called the Forty Thousand Dollar Endowment Fund)	26,892.00
WOODHULL FUND—Bequest of Margaret Willett Woodhull, received in 1946, the income to be used as required.....	50,000.00

FELLOWSHIP FUNDS

KING FELLOWSHIP FUND—Created in 1928 by bequest of Isabella Osborn King, the income to be used for a fellowship in biology.	75,322.00
MILLER FELLOWSHIP FUND—Bequest of Robin Miller, received in 1954, the income to be used for a fellowship in medicine for the study of cardiovascular disease.	10,000.00
SANDERS FELLOWSHIP FUND—Bequest of Addie Sanders in 1928 in memory of her brother, Thomas Bradford Sanders, the income to be used for fellowships in various academic fields of study.	205,933.32

PROFESSORSHIP FUNDS

ALUMNI PROFESSORSHIP FUND—Gifts of various alumni since 1911, the income to be used for an alumni professorship in mathematics.	830.00
CARROLL PROFESSORSHIP FUND—Created by Mary A. Sharpe in 1928 in memory of Mitchell Carroll, the income to be used for a chair in archeology.	500.00
CONGRESSIONAL PROFESSORSHIP FUND—Created in 1832 by gift of the United States of America by Act of Congress, the income to be used for professorships.	158,710.00
DEPEW COURSE IN PUBLIC SPEAKING FUND—Created by May Depew in 1936, the income to be used for a course to be known as the "Chauncey M. Depew Course in Public Speaking."	170,592.00
ELTON PROFESSORSHIP FUND—Bequest of Romeo Elton of Exeter, England, in 1872, the income to be used for a professorship to be called the "Elton Professorship of Mental and Moral Philosophy."	14,509.00
FRY PROFESSORSHIP FUND—Bequest of Annabel Lee Fry, received in 1945, in memory of her husband, Dr. Henry D. Fry, the income to be used for a professorship in physiology.	105,839.26
Created in 1945 from income of the original fund, the income of the two funds to be used for a professorship in physiology.	35,382.61
YULEE ENDOWMENT FUND—Bequest of Nannie Yulee Noble in 1929 in memory of her mother, Nancy Yulee, the income to be used for lectures in home economics.	5,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1954

SCHOOL FUNDS

GOVERNMENT

RANKIN ENDOWMENT FUND—Bequest of John O. Rankin, received in 1951, the income to be used for the School of Government 279,705.00

SCOTTISH RITE ENDOWMENT FUND—Created in 1928 by the Supreme Council of the Ancient and Accepted Scottish Rite of Freemasonry of the Southern Jurisdiction of the United States of America, as a permanent memorial to George Washington, The Mason, the income to be used to maintain a School of Government 1,000,000.00

LAW

ALTIZER FUND—Gift of Bertha E. M. Altizer in 1954, in memory of P. J. Altizer, the income to be used for the Law School 1,000.00

MEDICAL

BARTSCH DUNNE RESEARCH FUND—Created in 1952 by Dr. Anna Bartsch-Dunne from income of the Bartsch Scholarship Fund, the income to be used for research in medicine 3,329.42

BORDEN MEDICAL FUND—Created in 1956 by Dr. Daniel I. Borden and Jennie Ella Borden, in memory of William C. Borden, the income to be used for the School of Medicine 3,707.00

COLLINS MEMORIAL RESEARCH FUND—Created in 1946 by various donors in memory of Dr. James Lloyd Collins, the income to be used for special research in surgery 2,828.00

COOPER MEDICAL RESEARCH FUND—Bequest of Eleanor J. Cooper in 1905, on certain terms since modified by the Supreme Court of D. C. as follows: the income to be used toward the establishment and maintenance, in connection with the Medical Department of the University, of a Research Laboratory, the work of this laboratory to be directed to the investigation of the nature, causation, prevention, and cure of malaria and other infectious and contagious diseases 10,000.00

<i>EPPLEY MEDICAL SCHOOL FUND—Bequest of Mary V. Eppley in 1951, the income to be used for cancer research in the School of Medicine.</i>	1,000.00
<i>GARDNER MEDICAL SCHOOL FUND—Bequest of William D. Gardner in 1928, the income to be used for the School of Medicine.</i>	4,487.00
<i>LEWIS MEDICAL SCHOOL FUND—Bequest of Samuel E. Lewis in 1925, the income to be used for the School of Medicine.</i>	32,299.00
<i>RUFFIN MEDICAL SCHOOL FUND—Bequest of Dr. Sterling Ruffin in 1951, the income to be used for the School of Medicine.</i>	57,487.00
<i>SCHOOL OF MEDICINE ENDOWMENT FUND—Created in 1940 by various donors, the income to be used for the School of Medicine.</i>	11,171.00
<i>SHARPE MEDICAL SCHOOL FUND—Created by Mary A., Elizabeth M., and Sallie Sharpe in 1924, the income to be used for the School of Medicine.</i>	8,216.79
PHARMACY	
<i>GIBBS PHARMACY FUND—Created by M. G. Gibbs in 1927, the income to be used to aid in establishing and maintaining a commercial pharmacy course in connection with the School of Pharmacy.</i>	10,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1954

MISCELLANEOUS FUNDS

GRADUATE ENDOWMENT FUND—Created by the Class of 1926, to be used for the acquisition of sites, erection of buildings, and maintenance and purchase of equipment. Only the income may be used until the fund reaches \$50,000 when income and principal over \$50,000 may be used	14,811.00
HOWARD LECTURE FUND—Created in 1952 by Frank A. Howard, the income to be used for lectures on engineering	3,620.00

HOSPITAL FUNDS

CANCER CLINIC FUND—Created in 1953 by Mr. and Mrs. V. A. Klein, the income to be used for the Cancer Clinic	10.00
CHAPMAN HOSPITAL FUND—Bequest of Mrs. Susanna A. Chapman in 1911, the income to be used for the purposes of the free wards of the hospital	1,226.00
CLEPHANE HOSPITAL FUND—Gift in 1951 of Washington Monnae of Zeta Tau Alpha Sorority, in memory of Beatrice A. Clephane, the income to be used for the hospital	1,000.00
GENERAL HOSPITAL FUND—Created in 1929 by various donors, the income to be used for the hospital	1,445.00
HOLSER HOSPITAL FUND—Bequest of E. Keller Holser, received in 1944, the income to be used to endow a room in memory of his daughter, Anna Victoria Holser	2,500.00
KAUFMAN HOSPITAL FUND—Gift of Samuel H. Kaufman in 1954, the income to be used for the hospital	1,000.00
KIMMET HOSPITAL FUND—Bequest of Annie Kimmet, received in 1932, the income to be used for the hospital	3,072.00
KULLBANK HOSPITAL FUND—Bequest of Prada Kullbank, received in 1930, the income to be added to the principal and the principal shall be large enough to maintain a bed in the White Ward of the hospital to be known as the "Prada Kullbank Bed"	1,476.59
MALONEY HOSPITAL FUND—Created in 1952 by the Maloney Concrete Co., the income to be used for the hospital	2,000.00
NATIONAL PARK SEMINARY HOSPITAL FUND—Gift of students of National Park Seminary of Forest Glen, Maryland, in 1906, the income to be used toward the maintenance of a bed in the hospital	500.00
REINHARDT HOSPITAL FUND—Bequest of Luisa Wyano Reinhardt in 1922, the income to be used for the hospital	500.00

SANDERS HOSPITAL FUND—Request of Beatrice E. Sanders in 1951, the income to be used for the Cancer Clinic	29, 152.03
STRONG HOSPITAL FUND—Gift of estate of Hattie M. Strong in 1952, the income to be used for the hospital.	15, 000.00
TREE HOSPITAL FUND—Created in 1911 by bequest of Lambert M. Tree, in memory of his mother, Mrs. Laura M. Tree, the income to be used to maintain a bed in the hospital, to be known as the "Laura M. Tree Bed"	10, 000.00
WOMEN'S BOARD OF THE HOSPITAL	
BURTON HOSPITAL FUND—Created by Grace C. Burton in 1950, the income to be used for medicine for indigent persons	4, 000.00
WOMEN'S BOARD HOSPITAL FUND—Created in 1954 by the Women's Board of the Hospital, the income to be used for the purchase of equipment	14, 438.40
WOODBURY HOSPITAL FUND—Bequest of Ellen DeQ. Woodbury in 1909, the income to be used for the reception and treatment of female patients in the hospital	10, 000.00
LIBRARY FUNDS	
GLADSTONE LIBRARY FUND—Gift of Ethel S. Gladstone in 1951, the income to be used to purchase books for the Library.	175.00
HENSLY LIBRARY FUND—Gift of D. C. Masonic Clubs in 1951, the income to be used to purchase books for the Library.	200.00
HOWARD LIBRARY FUND—Gift of Colonel Deane Childs Howard in 1943 in memory of Captain Deane Childs Howard, Jr., the income to be used to purchase books for the Library	10, 000.00
MEYER LIBRARY FUND—Gift of Eugene Meyer in 1944, the income to be used to purchase books for the Library	1, 000.00
NOYES LIBRARY FUND—Request of Theodore W. Noyes, received in 1947, the income to be used to purchase books for the Library	10, 000.00
SCHOULER NATIONAL UNIVERSITY LIBRARY FUND—Request of James Schouler in 1921 to the National University Law School, the income to be used to purchase books for the Law Library	1, 500.00
SWISHER ALCOVE BOOK FUND—Gift of Dr. Charles Clinton Swisher in 1941, in trust for the Historical Society of the University, the income to be used to purchase books for the Swisher Alcove in the Library	2, 121.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1954

SCHOLARSHIP FUNDS

ANDREWS MEMORIAL SCHOLARSHIP FUND—Gift of Belle Fisk Andrews in 1920 in memory of her husband, Byron Andrews, the income to be used for scholarships "for ambitious and needy students of English, Latin, journalism, history, literature, or political science"	5,194.95
BARTSCH SCHOLARSHIP FUND—Created by Dr. Anna Bartsch-Dunne in 1946, the income to be used for a scholarship for a woman in the School of Medicine and an internship for a woman in the University Hospital	20,034.00
CARR SCHOLARSHIP FUND—Created by bequest of Emma K. Carr in 1932, the income to be used for scholarships for young white men	48,609.00
CARTER, H. H., SCHOLARSHIP FUND—Gift of Maria M. Carter in 1896 in memory of her husband, Henry Harding Carter, the income to be used for scholarships in civil engineering	5,000.00
CARTER, M. M., SCHOLARSHIP FUND—Gift of Maria M. Carter in 1871, the income to be used for scholarships for young men	1,000.00

COLUMBIAN WOMEN SCHOLARSHIP FUNDS

BROWN SCHOLARSHIP FUND—Created by the College Women's Club of Washington, D. C., in 1925, in memory of Elizabeth V. Brown, the income to be used for scholarships in the School of Education	1,200.00
CHAMBERLIN SCHOLARSHIP FUND—Created by the Columbian Women of The George Washington University in 1932 in memory of Grace Ross Chamberlin, the income to be used for scholarships for young women	2,300.00
COLLEGE WOMEN'S SCHOLARSHIP FUND—Gift of the College Women's Club of Washington, D. C., in 1926, the income to be used for scholarships	500.00
FOUNDERS OF COLUMBIAN WOMEN SCHOLARSHIP FUND—Created by the Columbian Women of The George Washington University in 1920, the income to be used for scholarships for women in Columbian College	5,000.00
HERRON SCHOLARSHIP FUND—Created by the Columbian Women of The George Washington University in 1925 in memory of Lillian Young Herron, the income to be used for scholarships for women in Columbian College	5,000.00
KNAPP SCHOLARSHIP FUND—Gift of the Columbian Women of The George Washington University in 1915 in memory of Nellie Maynard Knapp, the income to be used for scholarships for women	5,000.00
McWILLIAM SCHOLARSHIP FUND—Bequest of Janet McWilliam, former president of Columbian Women, to the Columbian Women of The George Washington University, transferred to The University in 1954, the income to be used for scholarships	1,000.00
WILSON SCHOLARSHIP FUND—Gift of Elizabeth Wilson in 1926 in memory of her parents, Lewes D. and Myrtie H. Wilson, the income to be used for scholarships in the School of Medicine	1,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1954

SCHOLARSHIP FUNDS (Continued)

DAVIS SCHOLARSHIP FUND—Gift of Isaac Davis in 1869, the income to be used for scholarships.....	1,000.00
D. C. D. A. R. SCHOLARSHIP FUND—Created in 1952 by the D. C. D. A. R., the income to be used for scholarships for descendants of patriots of the American Revolution.....	8,225.00
DORSEY SCHOLARSHIP FUND—Created in 1947 by Harryman Dorsey in memory of Charles Worthington Dorsey, the income to be used for scholarships.....	10,159.00
FARNHAM SCHOLARSHIP FUND—Gift of Mrs. Robert Farnham in 1871, the income to be used for scholarships in Columbian College.....	1,000.00
FISHER SCHOLARSHIP FUND—Bequest of Esther Brigham Fisher in 1951, the income to be added to principal until principal reaches \$1,000.00, after which the income shall be used for scholarships.....	905.93
HAMPLET SCHOLARSHIP FUND—Gift of Evelyn Hampel Young in 1948 in memory of her mother, Anna Spickel Hampel, the income to be used for scholarships for married women in the School of Education or Columbian College.....	500.00
HARVEY SCHOLARSHIP FUND—Bequest of Ellen Elizabeth Harvey in 1923, in memory of her daughter, Elma Lewis Harvey, the income to be used for scholarships in Columbian College for young women of the Protestant faith and of the Caucasian race.....	4,638.40
HAZELTON SCHOLARSHIP FUND—Bequest of Lillie S. Hazelton in 1950, the income to be used for scholarships.....	5,000.00
KENDALL SCHOLARSHIP FUND—Gift of Amos Kendall in 1869, the income to be used for a scholarship now designated by the Board of Trustees as one of the two High School Scholarships assigned to Central High School.....	5,960.00
MOREHOUSE SCHOLARSHIP FUND—Created by A. Morehouse in 1861, the income to be used for scholarships for under-graduates intending to enter the Christian ministry.....	1,500.00

PEARSON SCHOLARSHIP FUND—Request of Paul Pearson in 1944, the income to be used for scholarships in the School of Pharmacy	2,840.00
POWELL SCHOLARSHIP FUND—Created by Levin M. Powell in 1886, the income to be used to train young men for entrance in the United States Naval Academy or to fit them to become mates and masters in the Merchant Marine Service of the United States	50,000.00
SHEPARD SCHOLARSHIP FUND—Bequest of Lula M. Shepard in 1946, the income to be used for scholarships in the School of Government	10,000.00
SPENCER SCHOLARSHIP FUND—Created by Louisa J. Spencer in 1918, the income to be used for scholarships	7,422.20
STONE SCHOLARSHIP FUND—An anonymous gift in 1893 in memory of Mary Lowell Stone, the income to be used for scholarships for women students of science in Columbian College	2,000.00
SWISHER SCHOLARSHIP FUND—Created by Dr. Charles Clinton Swisher in 1941, the income to be used to award scholarships in Medieval History	13,630.95
WALKER SCHOLARSHIP FUND—Gift of William Walker in 1824, the income to be used for scholarships for undergraduates intending to enter the Christian ministry	2,500.00
WITHINGTON SCHOLARSHIP FUND—Gift of the New York Baptist Theological Seminary in 1830, on behalf of John Withington, the income to be used for scholarships	1,954.00
WOODHULL SCHOLARSHIP FUND—Bequest of Ellen M. E. Woodhull in 1921, the income to be used for scholarships in Columbian College	600.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1954

PRIZE FUNDS

BURNS MEMORIAL AWARD FUND—Gift of Persia Burns in 1937 in memory of her son, Byrne Thurtell Burns, the income to be used for an annual award in chemistry	1,000.00
COWLES PRIZE FUND—Created in 1943 by John Henry Cowles, the income to be used for annual awards in the School of Government	3,000.00
CROISSANT PRIZE AWARD—Bequest of DeWitt Clinton Croissant in 1941, the income to be used to award an annual prize for excellence in dramatics or dramatic studies	1,000.00
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August 31, 1954

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SUMMARIES OF
DOCTORAL DISSERTATIONS

1954

THE
GEORGE
WASHINGTON
UNIVERSITY
BULLETIN

SUMMARIES OF
DOCTORAL DISSERTATIONS

1954

WASHINGTON, D. C.

PUBLISHED IN MCMLV

BY THE UNIVERSITY

THE
HISTORY
OF THE
CITY OF
NEW-YORK

FROM
THE
FUNDAMENTALS
OF THE
CITY

TO THE
PRESENT
STATE OF THE
CITY

PREFATORY NOTE

This number of the University BULLETIN contains summaries of the dissertations which have been accepted during 1954, in partial satisfaction of the requirements for the degrees of Doctor of Philosophy, Doctor of Juridical Science, and Doctor of Education at The George Washington University.

AVAILABILITY OF DISSERTATIONS

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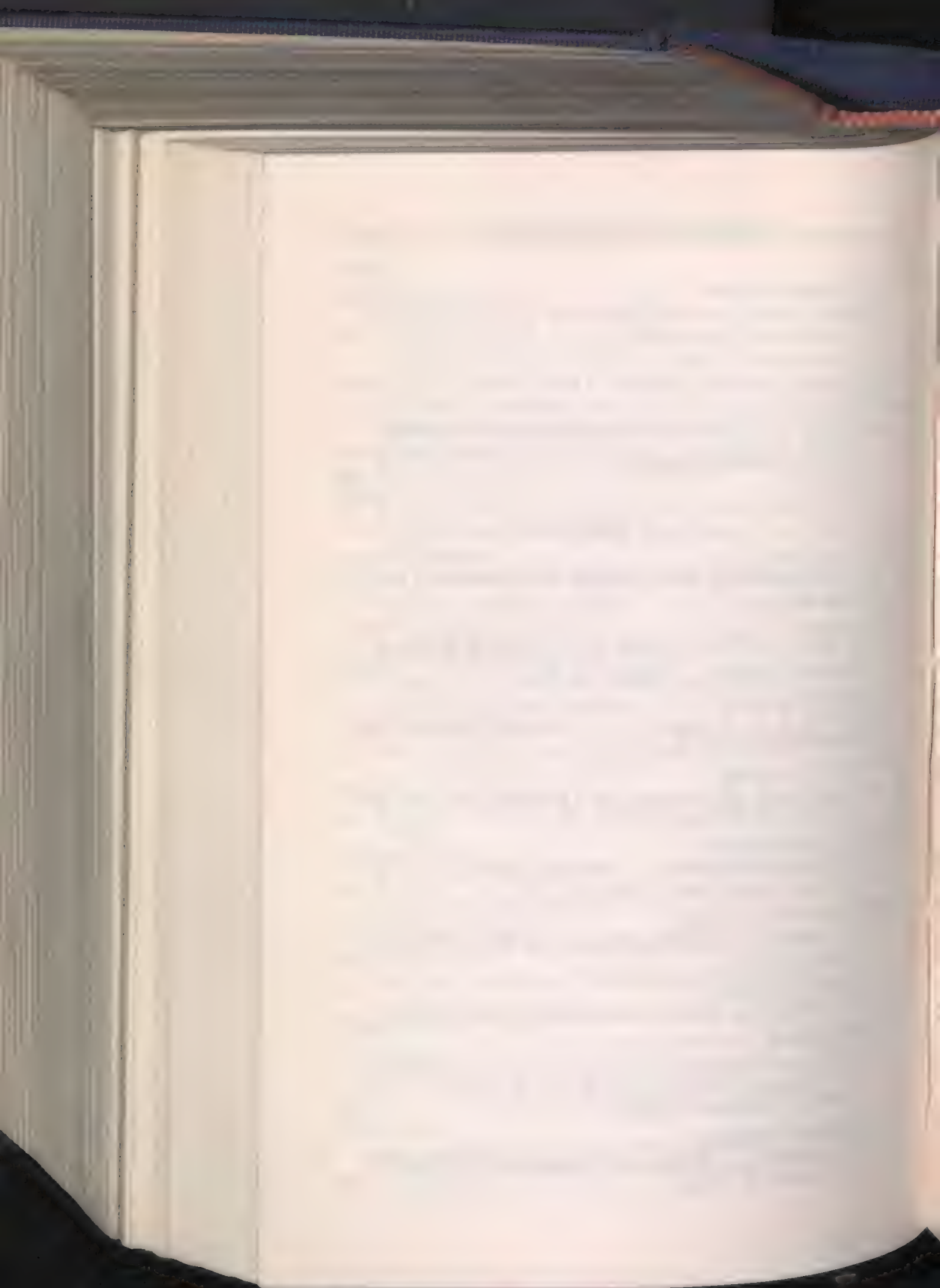
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SUMMARIES OF DISSERTATIONS
SUBMITTED FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

ATTITUDINAL INTENSITY IN RELATION TO PERSONALITY AND STATUS

by JACK ELINSON •

The current plethora of opinion polls and attitude surveys pays amazingly scant attention to the *degree of conviction* or *intensity* with which people express their opinions and maintain their attitudes. Yet observations in everyday life tell us that mere expressions of opinion are both meaningless and sterile unless supported by substantial conviction. Furthermore, attitudes—no matter how precisely measured as to content and position—are time and again shown to be only slightly predictive of non-verbal behavior. Popular distrust of opinion polls and attitude surveys appears to be based not alone on ignorance of the application of modern statistical sampling theory to human populations, but also on such sub-clinical assessments as:

Well, they may have said so, but they don't really mean it, and probably aren't going to do anything about it, anyway.

How has it happened that intensity of opinion has been largely neglected by professional students of opinion? Certainly, there has not been a lack of awareness of its significance. In point of fact, the pioneering research in this field made by Allport and Hartman more than a quarter of a century ago centered on a psychological analysis of college students who held extreme opinions and the intensity with which they were held. Indeed, before the turn of the century a study had been conducted at Columbia's Psychological Laboratory on variation in *certainly of opinion* with little regard actually to the content of the opinions.

It is our belief that inadequate study of the intensity of opinion has resulted from confusion between two independently measurable aspects, or dimensions, of opinion—position and intensity. Beguiled by the apparent association between position and intensity—extreme positions are in general held with high intensity—previous investigators may have felt that by precise pinpointing of positions on attitude scales they were in effect taking into account the influence of intensity. This confusion has unfortunately begun to be implanted in text-books as the following excerpt from a volume issued within the past five years illustrates:

The data obtained in public opinion and attitude surveys may be used to measure the strength of the attitude of each individual by a series of questions (as opposed to a single question) the answers to which are combined into a . . . score . . . Then the number or percentage of people holding attitudes of varying intensity may be ascertained.

• B.S. 1927, College of the City of New York. A.M. 1928, The George Washington University. Ph.D. conferred February 22, 1954. Professor in charge of research. Curtis Edward Tuttle, Associate Professor of Psychology.

Among those who have more clearly recognized the distinction between position and intensity in opinion attitude study are Katz, Cantril, Suchman, and Guttman. Katz has shown how various devices for ascertaining intensity of opinion may be applied to doorstep interviewing and has compared their relative effectiveness in predicting a respondent's answers to related questions. Cantril has shown how the application of even a single intensity question clarifies issues of public interest in opinion polls. Suchman and Guttman have shown how scales of attitudinal content and intensity measures may be combined to reveal a relatively invariant neutral position or zero-point on an attitudinal continuum. The determination of a fixed zero-point regardless of the specific wording of questions in the attitude scale has even been suggested as an objective solution to the vexing problem of question bias.

In Guttman's model of the components of scale analysis the content scale and its intensity function form two of a set of perfectly related "principal components". The content scale is the first component—a monotonic increasing function of the ranks. The intensity function constitutes the second component, a U-or J-shaped curve in the ideal case. Empirical studies of the first and second components of scale analysis have not as yet found data which fit the model with precision. Considerably more research has been done on attitudinal content scales and better fit between fact and theory has been found for this first component than for the second—the intensity function. What little research has been done on the intensity function has revealed general harmony with the theory, but, thus far empirical findings have been but crude approximations of the model.

One approach toward refining the relationship between content and intensity has been via the concept of "generalized intensity." On the supposition that some individuals are *habitually* more intense in their attitudinal content than others (or differ consistently in their verbal habits) an effort to account for the wide dispersion of intensity scores around midpoints of intensity for attitudinal content scale-scores is made. By holding constant generalized intensity the variability around the curve of the intensity function is reduced.

Considerable variability around the intensity curve remains, however. Apparently, scaling does not automatically take care of the intensity factor.

The present study set out to explore more intimately the relation between a man's position on an attitude scale and the intensity with which he maintains that position. We considered two sets of hypotheses:

1. *Attitudinal intensity will be a function of personality—that is, forces in the form of habits, tendencies, and verbal predispositions characteristic of persons in situations requiring attitudinal expression.*

II. *Attitudinal intensity will be a function of status in a group in relation to which the attitudes are expressed.*

Particularizing these hypotheses, we supposed, with respect to psychological variables, that persons who were chronically enthusiastic and vigorous in verbal expression would be those who would be likely to bolster their every fleeting opinion with profound avowals of certainty and conviction. On the reverse side of the coin we imagined that persons who habitually regarded themselves in an inferior light would tend to be diffident in their expression of opinion, perhaps even fearful to defend any position with any degree of conviction whatever. With respect to social variables reflecting status in a group, we reasoned that persons who were of higher status in any group were in consequence relatively secure, and that such security permitted individuals to hold fast to their opinion, regardless of the relative extremeness or neutrality.

To test these hypotheses, data were collected by means of self-administered anonymous questionnaires for 5,800 individuals representing enlisted men in the Army shortly after World War II. Built into the questionnaires were:

1. Measures of attitudinal position or direction, the content of which included attitudes toward officers, attitude toward the Army, attitudes toward discipline and toward rules and regulations, attitudes toward military needs for manpower, and attitudes toward methods of dealing with Russia. Each universe of content was tapped by a series of questions and tested for unidimensionality.

2. Measures of attitudinal intensity. Each content attitude scale had associated with it a series of intensity questions. The technique used was to follow each content item with a second item such as the following:

How strongly do you feel about this? (check one) _____ Not at all strongly; _____ Not so strongly; _____ Fairly strongly; or _____ Very strongly.

3. Measures of personality. The setting of our study—military morale attitude surveys by means of self-administered questionnaires—prompted the use of objectively scored personality tests that could be suitably integrated with an attitude questionnaire. Accordingly three abbreviated sets of Minnesota Multiphasic Personality Inventory items taken from the 'hypomania scale', the 'depression scale', and the 'psychopathic deviate' scale were used. In addition, items from Slatt's 'inferiority' scale were also used. The published descriptions of these personality measures seemed to approximate the high and low intensity correlates we had hypothesized.

4. Measures of group status. In the military environment, among social status factors contributing to security feeling we presumed were military rank, length of service, age, and amount of education.

All the attitudinal content scales employed had passably high reproducibility coefficients ($>.90$) when tested for unidimensionality. The intensity-items series produced only quasi-scales, the errors of non-reproducibility being essentially random. In addition to a quasi-scale of specific attitudinal intensity applied to each specific scale of content, a

generalized intensity quasi-scale was developed by utilizing intensity items from each of seven areas of attitudinal content. The various personality item-sets were also tested for unidimensionality, but their reproducibility coefficients were substantially lower than for either the attitudinal content or attitudinal intensity item-sets. Perhaps this should have been expected from a knowledge of the essentially empirical manner in which they had originally been derived.

It was found that the "specific attitudinal intensity" associated with an attitudinal content scale is partially accounted for by—

1. *Specific position on the attitude.*—In general, the more extreme the position on the content scale, the higher is the intensity score. However many men with high intensity scores had attitudinal positions that were only moderate or even neutral (at or around the "zero-point"); and many men with low intensity scores maintained extreme positions on the scale of content. The relation between specific intensity and the attitudinal content upon which it is based is best represented by a simple curvilinear function (η , in the instance examined, was 0.4).

2. *Generalized intensity.*—Variation in disposition to be generally intense in expression of attitudinal position accounts for some of the variance in specific attitudinal intensity. Habitually high intensity over many attitudinal universes is strongly correlated with high intensity in a specific universe. In fact, generalized intensity of all the factors considered in this study is the one which shows the highest relationship with specific intensity (to the extent of a Pearson r of .6, with no items in common). Our finding in this regard must necessarily be qualified in terms of the restricted range of universes of attitudinal content with which the present study was concerned. It is conceivable that had the attitudinal contents been more diversified the correlation between general intensity and any specific intensity associated with a given universe of attitudinal content might have been lower than was actually the case.

3. *Personality variables.*—The relationships between the personality variables used in this study and attitudinal intensity are statistically significant, but quite small, and in the hypothesized direction. High intensity scores tended to be associated with low "inferiority" scores, high "hypomania" scores, and high "psychopathic deviate" scores, as hypothesized. There seemed to be no statistically significant relation between intensity and "depression" scores.

The low order of the relationships between the personality measures and intensity must be stressed. However, it should be pointed out that the personality measures drawn as they were from currently published materials in the field were clearly multidimensional and, except for Sletto's items, of rather high unreliability as evidenced by conventional checks of internal consistency.

Until further confirmatory research is done therefore, it must re-

main a matter of belief, rather than of demonstrated fact, that superior assessments of personality would reveal greater relationships with attitudinal intensity than the ones employed in this study. One piece of evidence from the present study which bolsters this belief, however, is the finding that a *pattern analysis* of personality yielded clearer relationships with intensity than the use of single personality measures.

4. *Group status indices*.—All relationships found between group status indices—age, educational level, length of military service, and rank—were positive, low, and statistically significant. Older men, better educated men, men with longer service, and higher military rank are more likely to express attitudes with sureness and conviction than are younger men, less educated men, men with shorter service, and men of lower military rank. The hypothesis is supported that the higher the status in a group the greater the intensity with which attitudes are expressed. The intervening variable is presumed to be either feelings of security, engendered by the higher group status, which permit more positive affirmations of one's beliefs; or a cultural phenomenon which places demands upon high status individuals to behave in accordance with their status, i.e., to speak positively. Whatever the mechanism the fact remains that relatively high status individuals are more intense than relatively low status individuals. Again, it is felt that superior measures of status—perhaps, more subjective measures involving status attributed by the group to the individual and recognized or concurred in by the individual himself—would magnify the glimpse we have seen of the relation between status and attitudinal intensity.

The study was stimulated by the thought that careful analysis of factors affecting expressions of attitudinal intensity would serve to "reduce the variance about the curve of the intensity function" and thereby bring about a better fit between empirical data and Guttman's model of the first and second components of scale analysis. The study has shown that factors of personality and status as well as habits of expression are related to intensity; and that these factors affect the relationship between position on an attitude scale and the intensity with which the position is maintained. It is suggested that further research in this field consider that deviations from the intensity function are not simply errors non-reproducible from a mathematical model, but produce important sub-groupings of persons of possible significance in studies of opinion and attitude change. A classification of persons on the basis of their relation to the intensity curve is recommended as a point of departure for differential analysis. Thus persons can be grouped into (1) mesopaths—persons having normal (i.e., average) intensity scores associated with their positions on attitudinal content, (2) hyperpaths—persons having higher than average intensity scores associated with their positions on attitudinal content, and (3) hypopaths—persons

having lower than average intensity scores associated with their attitudinal positions. One hypothesis that suggests itself is that resistance to change is less a function of position on an attitude, whether extreme or moderate, or neutral, and more a function of whether the intensity with which one maintains his position is normal for that position.

A second application of measurements of intensity of attitude derives from the concept developed in this study of "isopathy" or equal intensity of feeling. This concept is suggested as a means of equating attitudinal position distances from the zero-point in accordance with psychological strength (median intensity value). We now also have a means of psychologically evaluating the distance between two position scores on a Guttman attitude scale in terms of the intensity of feeling with which the positions are maintained and their relation to the zero-point.

AFFINE CONNECTION IN SPACE OF LINE ELEMENTS

by VALDEMARS PUNGA *

The object of this dissertation is the development of the theory of affine connection (or parallel displacement) in the space of line elements.

The space of line elements (space A_n) is a set of objects in $(1-1)$ correspondence with $2n$ ordered real numbers $(x^1, x^2, \dots, x^n; p^1, p^2, \dots, p^n)$ or simply (x^a, p^a) or (x, p) where line elements (x, p) and (x, cp) , (c is a positive constant) are considered equal. If (x^a, p^a) are coordinates of a line element in coordinate system (a) and (\bar{x}^a, \bar{p}^a) are coordinates of the same line element in coordinate system (\bar{a}) , then

$$\bar{x}^a = x^a(x^a)$$

$$\bar{p}^a = \frac{\partial x^a}{\partial \bar{x}^a} p^a,$$

where \bar{x}^a are single-valued differentiable functions (as many times as required) of x^a with Jacobian different from zero.

The linear displacement of tensors in space A_n is introduced by means of geometric objects $\Gamma^a_{\beta\gamma}(x, p)$ whose components are homogeneous functions of degree zero in p with law of transformation

$$\bar{\Gamma}^a_{bc} = \frac{\partial x^a}{\partial \bar{x}^a} \frac{\partial x^b}{\partial \bar{x}^b} \frac{\partial x^c}{\partial \bar{x}^c} \Gamma^a_{\beta\gamma} + \frac{\partial x^a}{\partial \bar{x}^a} \frac{\partial^2 x^b}{\partial \bar{x}^b \partial \bar{x}^c}$$

and a tensor $C^a_{\beta\gamma}(x, p)$ whose components are homogeneous functions of degree (-1) in p .

The covariant differential (δ) of a contravariant vector $V^a(x, p)$ is defined by

$$\delta V^a = dV^a + \Gamma^a_{\beta\gamma} V^\beta dx^\gamma + C^a_{\beta\gamma} V^\beta \delta p^\gamma$$

where δp^β is covariant differential of the direction p : $\delta p^\beta = dp^\beta + \Gamma^\beta_{\alpha\gamma} p^\alpha dx^\gamma$. Space A_n with affine connection is called space B_n .

It is shown that this type of linear displacement naturally results as a consequence of the fundamental assumptions about the structure of the space B_n .

The process of covariant differentiation in space B_n for tensors of higher order is developed.

Two differential tensor operators $\frac{\nabla}{\nabla_x}$ and $\frac{\nabla}{\nabla_p}$ are obtained which are generalizations of J. A. Schouten operator ∇_μ . The curvature tensors of space B_n are developed.

The following fundamental theorem for the space B_n is proved.

Any five tensors $S^a_{\beta\gamma}(x, p)$, $\bar{S}^a_{\beta\gamma}(x, p)$, $Q_{\gamma\alpha\beta}(x, p)$, $\bar{Q}_{\gamma\alpha\beta}(x, p)$ and $f_{\alpha\beta}(x, p)$, where

- All five tensors are homogeneous functions of degree 0 in p .
- $S^a_{\beta\gamma}$ and $\bar{S}^a_{\beta\gamma}$ are skew-symmetric in β and γ indices.
- $Q_{\gamma\alpha\beta}$ and $\bar{Q}_{\gamma\alpha\beta}$ are symmetric in β and α indices.

d) $f_{\alpha\beta} = \frac{\partial^2 f}{\partial p^\alpha \partial p^\beta}$ with determinant different from zero, determine uniquely an affine connection which is such that

$$\frac{\nabla}{\nabla_x} f_{\alpha\beta} = Q_{\gamma\alpha\beta}$$

$$\frac{\nabla}{\nabla_p} f_{\alpha\beta} = \bar{Q}_{\gamma\alpha\beta}$$

$$(\frac{1}{2}) (\Gamma^a_{\beta\gamma} - \Gamma^a_{\gamma\beta}) = S^a_{\beta\gamma}$$

$$(\frac{1}{2}) (C^a_{\beta\gamma} - C^a_{\gamma\beta}) = \bar{S}^a_{\beta\gamma}$$

* Minister of Mathematical Sciences 1948. University of Latvia, Riga, Latvia; Ph.D. conferred February 22, 1954. Professor in charge of research James Henry Taylor. Professor of Mathematics.

Finally by means of this fundamental theorem it is shown that the Finsler geometries of the following are particular cases of differential geometry developed in this dissertation:

- a) E. Cartan ("Les espaces de Finsler," II, Act. scient. et. ind. 79, 1934).
- b) L. Berwald ("Über Parallelübertragung in Räumen mit allgemeiner Massbestimmung" Jahresbericht d. deutschen Math.—Ver. 34, 1925).
- c) J. H. Taylor ("A generalization of Levi-Civita's Parallelism and the Frenet Formulas". Trans. Amer. Math. Soc. 27, 1925).

RELATIONSHIP OF THE ITEMS OF THE CUMULATIVE RECORD TO POST HIGH SCHOOL STATUS

by HELEN SEEGAR STONE*

This paper reports an investigation of the usefulness of cumulative records in predicting post high school status. Cumulative records, which have become an accepted tool of pupil personnel work in secondary schools in the last twenty-five years, are now being investigated by national planners and this study was part of such research. The Commission on Human Resources and Advanced Training of the National Research Council suggested it as a pilot one in their search for young talent. While their principal interest was in college entrants, the material provided data for seven other post high school status situations and all eight are included in the report.

According to the literature, post high school status groups have had considerable but haphazard study. The college group has had by far the most attention but the vast amount of accumulated material has not been well organized and, so, has provided no distinct predictive aids. Studies of factors which induce high school graduates to enter the various occupations are just now being conducted by the United States Employment Service using their new General Aptitude Test Battery. Nothing of much value has been submitted on the motivational factors which underly these status choices. Only recently has any statement of the theoretical formulation of vocational development been available for testing and little has been attempted as yet. This study undertook to make a contribution in this area.

The sample for the investigation consisted of 1,081 graduates of the 1949-51 classes from the four high schools for white pupils in Fairfax County, Virginia, who were chosen because their cumulative records provided more items than any other available set. For each of the subjects, the post high school status four months after graduation was found by follow-up procedures to include college and schools other than college; clerical, sales, and labor occupations; Armed Forces; housekeeping; and a miscellaneous group. The method of study consisted of description of each of these status groups—the criterion groups—in terms of those of the sixty items of the cumulative records—the basic data variables—which related significantly to them and thus indicated differences between groups.

The procedures included, first, the description of the total sample in terms of the sixty basic data variables to be used as the norms for the identification of the various status groups. Since these variables were

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considered influential in the choice of status, they were arranged in vocational choice developmental sequence as follows: *family background variables* which are the most stable and irreversible since the individual cannot change them; second, *ability variables* which are somewhat irreversible but are also amenable to change; third, *school performance variables* which are indicators of the level of aspiration; fourth, the *personal choice variables* which indicate the individuality, the self concept, and are said by the theory to be heavily loaded with personality aspects; and finally, the personality measure scores as made on the teachers' ratings and on the California Test of Personality, Form A, 9—College, which had been taken in Grade 8. The hypothesis was that these personality indicator variables would make the greatest status group differentiations.

The second procedure consisted of the chi square analysis of the relationship of each variable to each criterion status choice. Each variable was dichotomized at the total sample median and those which gave chi squares significant at the 5 per cent level or less were considered to have made a significant contribution to the identification of the status group being analyzed, with the size of the contribution being the difference between the two proportions above the total sample median used in the calculation. These difference amounts were used to construct a set of profiles for each status group—one for the total and one for each sex group where there were two sex groups. This profile consisted of a graph with a decile abscissa on which the entry was this amount of significant difference with its appropriate sign. The positive contributions were plotted to the right of the line representing the total sample medians. The contribution was positive if the status group proportion was greater than that of the comparison group.

The final analysis was that of the items of the California Test of Personality from which was obtained a subtest of personality items significant for the identification of each status group in comparison with each of the others. This procedure included the calculation of the critical ratio of the difference between the number of "yes" responses made by the two extreme status groups for each item—the "most" and "fewest" response groups. Those items giving a critical ratio significant at the 1 per cent level or less were assembled in the status subtest and interpreted to indicate the attitudes that were typical of each status group.

The college entry group was the largest status group of the sample having 191 males and 173 females. It differed significantly from the total sample in all but a few variables. In the family background category, these college individuals were found to be younger, to have come from smaller families, to be usually the first child, to be children of college educated fathers who were very likely to be professional men, and of mothers who were college trained and generally housewives—

although the children of professional mothers were more likely to enter college. Variables of the ability group showed that the college entrants had higher scores on the available intelligence tests—Otis Quick Scoring Test of Mental Ability and the American Council on Education Psychological Examination, 1947 College Edition; better reading ability according to their scores on the Stanford Achievement Test for Reading; and their scores on the Kuder Preference Record indicated that they had higher scientific and literary interests but lower clerical, computational, and mechanical ones than the remainder of the sample. The school performance variables showed these college entrants with higher levels of aspiration than others: they were higher in class rank, held more school offices, received more honors, participated more in athletics, and earned higher activity counts during their high school careers although their attendance records were no better than the average of the sample. In their personal choices, they showed unanimous selection of the academic course with science as their favorite subject, that they and their parents had planned that they would enter college, and that they would enter a profession. In the matter of liking fiction, parties, and sports, they did not differ from the non-college groups. In the area of measured personality characteristics, the college entrants were the best adjusted of the eight groups on all the measures with the college females indicating better adjustment than the males. Forty-three items of the basic data variables differentiated them from other groups. When the profiles were constructed, it was apparent that the variables which contributed most to this status choice were those of the plan to enter college—with a difference value of 60 per cent—and the father-mother education-occupation cluster with a difference value of 40 per cent. The interpretation was that these factors were most effective in the decision to enter college after high school and that they were composites of which all other significant variables were the components. While it was apparent that the personality measures did not completely make the differentiation of the college entrants from others, their prominent place—the personal choice variables and the personality measure scores—among the high contributors gives pause to the rejection of the hypothesis that they would do so. They may well be the most important components of these two high contributor composites indicating the motivation and direction of choice. The college subtest of personality items indicated that these individuals held significantly different opinions and attitudes from others on thirty-eight items of the California Test of Personality. Most of these items occurred in the area of "self adjustment" with those in the subtests of "self reliance" and "a sense of personal worth" being most significant and on which the college group showed the better adjustment. Thus, this good adjustment picture seems typical of the college group.

The second most identified status group was that of "other school" entrants. Of the males, six were in business school, four were in trade school, one was in preparatory school, and fourteen had returned to high school for post graduate work. Of the females, twenty-six were in nurse training in hospitals, fourteen were in business school, and one was in an art school. Their profiles indicated that thirty-eight basic data variables differentiated them from those graduates who had entered a working occupation as soon as graduated. The two largest contributors to the identity of this group were the variables of the unrealized plan to enter college and a cluster of professional father-mother occupation ones. In these profiles, the resemblance to the lower end of the college distribution was very apparent with the females resembling the college females more than the "other school" males resembled the college ones. The subtest of personality items of the California Test of Personality was the largest in the study. Twenty-nine of the forty-four items pertained to the males of the group who showed poorer adjustment than college males, but better than the working males. It was conjectured that this may have indicated the factor which accounted for their failure to enter college.

The clerical group, consisting of two hundred ninety-four females and thirty-eight males, gave a profile only for the total group. The number of females was so great that it determined the norms for the working females and differences were not available. The profile for the total group contained twenty-two basic data variables of which the personal choice variables were most prominent. The largest contributor to the over-all picture of clerical workers was the variable of a dislike for sports, although that of a dislike for parties was also significant. The second largest contributor was the variable of a plan to enter the clerical occupations together with those of the selection of the commercial course and typing as the favorite subject. These two clusters were sufficient to account for the clerical choice in terms of the measurement device used in the study. It was also found that the ability variables were more than sufficient to account for this status choice and it was conjectured that ability had not been well utilized in the vocational choice, probably because the lack of control of the strong likes and dislikes had interfered with maximum utilization of ability. It might even be conjectured that (with more ability present than used) a choice between college entry and the clerical occupation by individuals of the same ability might well be assigned to the personality. The subtest of items from the California Test of Personality contained twenty-nine items for the clerical group which offered more differentiation for the males than for the females. In each case, the clerical group showed poorer adjustment than the two school entering groups which offers further evidence of the probable effect of the personality in this status choice.

In the sales group, there were twenty-five males and eighteen females. All were engaged in counter sales work with the exception of one male who operated a news route. The profile for the total group contained only three significant variables—the contribution of low social adjustment, the lack of self reliance, and the lack of a sense of personal worth. Obviously, the sales group was identified by the personality make-up. This confirms the results of other studies which have indicated that sales persons are identified by their personality and their interests. The subtest of personality items reinforced the prominence of the personality in this status choice. There were forty-three differentiations from other groups which made it the largest subtest list in the study. The sales group had poorer adjustment than all other groups, with the exception of the housewife and Armed Forces groups. According to this study, the motivation to enter sales work is provided by the negative nature of the personality—those traits which indicate poor adjustment.

The males who had entered the labor occupations were described by ten significant basic data variables. The largest contribution was made by the variable of mechanical ability, followed by the variables of the plan for entry into a labor occupation, the selection of the vocational course in high school, "shop" as the favorite subject, a mechanical hobby, low "ACE" scores, a father in a labor occupation who had an average of eight years of school, low scores on the "self reliance" and "feeling of belonging" subtests of the California Test of Personality. All of these were required to account for the choice. It may well be that this vocational choice was heavily urged by the father with the resultant submissiveness apparent in the personality items. There were only sixteen items of the California Test of Personality which significantly differentiated these males but these items indicated that there was better social adjustment but poorer self adjustment than was shown by other males in the working occupations.

The miscellaneous group was composed of twenty males—ten farmers, four professional baseball players, two independent business operators, and four commercial artists. Only four variables related significantly to this group: below average mental ability, strong dislike of any further schooling, vocational plans appropriate to their status situations, and low social adjustment scores on the personality measure. There was a subtest of twenty-one items from the California Test of Personality which confirmed the lack of social adjustment in comparison with other groups. In this group also were the nine unemployed females for whom only two variables showed significant relationship—high mental ability on the Otis Quick Scoring Test of Mental Ability as measured in grade 8 and an aversion to the clerical occupation.

The Armed Forces group profile presented an anomaly. Two subtests of the California Test of Personality indicating below average adjust-

ment in the areas of "social adjustment" and the "anti-social tendencies" together with above average class rank were the only significant variables. This strong motivation from negative personality measures could only open up a large area of conjecture as to what these one hundred twenty-nine males might have done had there been no military urgency or why they had made no other vocational preparation. The subtest of ten personality items indicated that this group had the poorest social attitude of all the males.

The housewives group consisted of thirty-four females who were married, in their own homes, and otherwise not gainfully employed four months after graduation, and five females who had undertaken other service occupations—three were waitresses, one employed in a beauty parlor, and one cared for children. Seven variables were significantly related to this status choice. It seemed to be determined by the family background variables of a father in a managerial occupation with less than eight years of school, above the average number of siblings, below average school attendance, dislike of sports and of all science subjects together with the plan to marry. These variables seem to indicate that the power of the vocational-educational plans coupled with the father education-occupation factors are as forceful in obstructing occupational choice when negative as they are in positively creating the peak status choice of college entry. A subtest of seventeen items from the California Test of Personality indicated that these females differed most from their peers in the showing of poorer overall adjustment than college females but better than the sales females.

The procedures of the study provided lists of identifying variables which differentiated the status groups in varying ways: by the difference in the number of significant variables; by the intensity of the dynamic power of the factors as measured by the size of the differences determined by the chi squares; by the areas of the dynamic structure emphasized; and by the predominance of the personality factors. It was concluded that the items of the cumulative records of high school populations may well be used for such post high school status identifications and that this descriptive use is only part of their potential function since they also provide indications of the intensity and the direction of the dynamic power of the factors which influence vocational choice. While the personality items did not make the largest contributions to this identification of each status choice, it is evident that, for some groups, they were the most important and that they were sufficiently present in all profiles that their central position in status choice can well be postulated for further study.

It is suggested that these results will have considerable usefulness as guidance aids in the secondary schools. The profile device is recommended as a tool for the study of an individual school population in

relation to the post high school opportunities in its community, for an understandable graphic presentation of such results, and for pointing up the material to be wisely included in cumulative records. It may also serve as an outline of the vocational aptitude of the individuals in a school and thus direct early attention to educational and vocational planning.

It is also suggested that this profile provides the very necessary organizing device for other studies of this problem. If the immense amount of work already done on the characteristics of the college entering population had used such a methodology, there would have been available a body of organized information on the subject. Occupational group studies are now using a similar device with rewarding results. The subtest of personality items offers a valuable new tool for the search for the personality components of job analysis.

ASCORBIC ACID DISTRIBUTION FOLLOWING THE ADMINISTRATION OF ADRENOCORTICOTROPHIN (ACTH), CORTISONE, OR EPINEPHRINE

by NORMAN ALTSZULER *

It has been reported by Selye that the adrenal gland hypertrophies in response to a variety of stress conditions. Subsequent workers have shown that stimulation of the adrenal cortex and the release of adrenocortical hormones (corticoids) was accompanied by a depletion of adrenal ascorbic acid and cholesterol content. Administration of ascorbic acid to rats and guinea pigs exposed to cold prevented the adrenocortical hypertrophy and prolonged their survival time. Similar pretreatment of ascorbic acid to adrenalectomized animals did not protect them from cold.

The relative disappearance of ascorbic acid from the adrenal following stressful stimuli has led to much speculation regarding the relation between the vitamin and cortical hormones. It has been reported that the adrenal, though depleted of its ascorbic acid, is still responsive to ACTH; that the ascorbic acid pretreatment prolongs and potentiates certain effects of the glycogenic steroids; that the ascorbic acid forms a water-soluble conjugate with the glycogenic steroid; that the ascorbic acid in the adrenal venous blood is not increased following adrenal stimulation; and that the vitamin may be needed for optimal adrenal gland function.

According to Pirani's contention, under conditions of stress, the tissue stores of ascorbic acid are called upon to supply amounts necessary for an optimum function of the adrenal cortex. It was felt that such diversion of ascorbic acid might be reflected in changes of the concentration of ascorbic acid in various tissues. The present study was therefore designed to detect such changes in various tissues of the intact rat at specific periods following the injection of ACTH, cortisone, or epinephrine. Furthermore, if such changes were for the purpose of facilitating optimal functioning of the adrenal cortex, it was of interest to investigate whether they would occur in the absence of the adrenal gland, or in the presence of excessive amounts of ascorbic acid.

Four types of animal preparations were used: (1) intact animals; (2) intact animals, pretreated with ascorbic acid (Vitamin C); (3) adrenalectomized animals, and (4) adrenalectomized animals pretreated with ascorbic acid. Animals of each type received a single injection of either ACTH, cortisone, epinephrine, or saline, and were sacrificed at $\frac{1}{2}$, $3\frac{1}{2}$, and 24 hours following injection. The adrenals.

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spleen, liver, and whole blood were analyzed for their ascorbic acid content.

The animals used in these experiments were kept in quarters of fairly even temperature, and had free access to Purina Laboratory Chow and tap water. The animals were young female Wistar rats, weighing 180-240 grams. The sequence of treatments was randomly selected, and so were the rats.

The adrenals of the adrenalectomized animals were removed under nembutal anesthesia in a one-stage operation. Following the operation, the animals were maintained on a Purina Chow diet and 0.9 per cent sodium chloride solution as the only source of water. The animals were allowed at least one week to recover from the operation.

The pretreatment with ascorbic acid consisted of two injections of ascorbic acid (Vitamin C, Injectable, Sodium ascorbate, Roche), at a dosage of 100 milligrams per 100 grams body weight. One injection was given on the preceding evening and the second one on the following morning, 5-7 hours prior to the experiments.

The hormone treatments consisted of a single injection of ACTH, epinephrine, or cortisone. ACTH (Armour, lot 212-103) was given intraperitoneally at a dosage of 2.5 milligrams (La-1-A standard) per 100 grams body weight. Epinephrine (hydrochloride) was given intraperitoneally at a dosage of 0.03 milligrams per 100 grams body weight. Cortisone (Cortone, Merck) was given subcutaneously at a dosage of 2.0 milligrams per 100 grams body weight. Saline intraperitoneal injections of the same volume as the hormone injections served as controls.

The animals were sacrificed at $\frac{1}{2}$, $3\frac{1}{2}$, and 24 hours following the injection. Each animal was anesthetized with nembutal (3 milligrams per 100 grams body weight), and the peritoneal cavity exposed. A blood sample was taken by intracardiac puncture and the blood was placed in a tube containing trichloroacetic acid (5 per cent) for the determination of ascorbic acid. The adrenal, spleen, and a portion of the liver were removed, freed from adhering fat, weighed on a Roller-Smith precision balance to the nearest tenth of a milligram, and then quickly placed into tubes containing trichloroacetic acid (5 per cent). The tissues were prepared for analysis of their ascorbic acid content, according to the method of Roe and Kuether.

The data for each tissue were subjected to the analysis of variance, as presented by Snedecor, with modifications by A. M. Griffin. Individual differences observed from the data were then evaluated in terms of error variance applicable to the tissue being considered.

The major effects were observed at the $\frac{1}{2}$ hour period, and in some instances at the $3\frac{1}{2}$ hour period following the hormone treatments. ACTH and epinephrine treatment lowered the adrenal ascorbic acid in the normal rat at the $\frac{1}{2}$ hour and the $3\frac{1}{2}$ hour periods, and the

values returned to normal or above normal at 24 hours. The adrenal changes at the $\frac{1}{2}$ hour following the two hormones were accompanied by an increase in the ascorbic acid values of the spleen and whole blood. Cortisone lowered (5 per cent level of significance) the adrenalascorbic acid only at the $\frac{1}{2}$ hour period, but otherwise produced no changes.

Vitamin pretreatment did not block the action of ACTH on the adrenal at the $\frac{1}{2}$ hour, but decreased the effect of epinephrine. Also, in those animals ACTH and epinephrine increased the ascorbic acid concentration in the liver and blood. Cortisone increased only the blood vitamin values.

In adrenalectomized animals at the $\frac{1}{2}$ hour period, ACTH was without effect, while epinephrine lowered the ascorbic acid of the blood and increased that of the spleen. Cortisone increased only the spleen values (5 per cent level of significance).

The observations in the normal rat at the $\frac{1}{2}$ hour following ACTH and epinephrine, e.g., decreased adrenal ascorbic acid and a concomitant increase in the spleen and whole blood ascorbic acid, posed some questions as to whether the increased values were due to: (1) an outflow from the adrenal gland, (2) a decrease in the utilization of the vitamin by the specific tissues, (3) an increase in the synthesis of the vitamin, or (4) a diversion of body stores of the vitamin to those tissues. An outflow of ascorbic acid from the adrenals was discounted on the basis of Vogt's and Hechter's inability to detect increased amounts of ascorbic acid in adrenal vein blood following stimulation of the adrenal. The possibility of a decreased utilization of the vitamin seemed unlikely in light of numerous reports in the literature that under conditions of stress there is actually an increased utilization and excretion of the vitamin.

The possibility that the observed increased values at the $\frac{1}{2}$ hour were due to an increased synthesis of the vitamin seems doubtful because of the rapidity of the observed changes. That a longer period is required for synthesis is suggested by the finding, that in the rat, there is a 5-6 hour lag between the time of maximal depletion of adrenal ascorbic acid following ACTH and the return to normal values. Thus, it would appear that the observed increased values were due to a diversion of ascorbic acid from other tissue reserves.

The observations that vitamin pretreatment decreased the action of epinephrine, but not of ACTH, on the adrenal ascorbic acid at the $\frac{1}{2}$ hour period, are in agreement with previous observations that similar pretreatment blocked the epinephrine action on blood eosinophils in mice and guinea pigs. Since in those studies, the vitamin pretreatment did not block the glycogenolytic action of epinephrine, and therefore probably did not act on the hormone directly, it would appear that the blocking action of the vitamin was at the level of the pituitary-adrenal axis, possibly at a pre-pituitary site.

The finding that ACTH had no effect on the blood ascorbic acid values in the adrenalectomized animals, while epinephrine actually lowered them, which contrasts with their actions to increase the blood values in the normal animals, suggested that the two hormones require the presence of the adrenal gland to exert their observed actions in the normal.

The action of epinephrine to increase the spleen ascorbic acid in the absence of the adrenal glands, demonstrated an action of the hormone which is not mediated through the adrenal cortex. Another independent effect of epinephrine, which had been attributed to its stimulation of the adrenal cortex, is the action to lower blood eosinophils. This was demonstrated by the ability of the hormone to produce an eosinopenia in the adrenalectomized rat (Recant), and in the Addisonian patient (Thorn).

The increase of the spleen ascorbic acid following ACTH and epinephrine may be associated with the physiological role of the gland. It may be speculated that the increased ascorbic acid concentration in the spleen may facilitate the distribution of the vitamin, via the blood cells, to peripheral foci of increased utilization or need. The concomitant rise of whole blood ascorbic acid and the findings by Booker add to the plausibility of such a relationship.

Numerous investigations have been conducted to determine the role of ascorbic acid in the production of hormones by the adrenal cortex. Any suitable explanation would have to account for the initial disappearance of the vitamin from the stimulated adrenal gland. Tepperman has shown that the addition of ACTH to an *in vitro* adrenal preparation caused an increased oxygen utilization, while Saffran also demonstrated an increased cortical hormone production under similar conditions. It seemed feasible to extend Vogt's work, by utilizing an *in vitro* adrenal preparation, which would allow one to correlate the adrenal ascorbic acid concentration with the functional state of the adrenal, as well as to detect any shift of the ascorbic acid from the gland into surrounding buffer medium following the addition of ACTH.

The adrenal glands of each young female Wistar rat were removed under nembutal anesthesia, dissected free of fat, weighed and then bisected with scissors. Each gland was placed in a tube containing 2 milliliters of Clark-Lubs phosphate buffer solution of pH 7.4, with added glucose (200 milligrams per cent). To one of the two tubes, 0.5 milliliters (500 micrograms) of a solution of corticotrophin (ACTHAR, Armour) was added, but was withheld from the second tube until after the incubation. Both tubes were then placed for five minutes in a constant temperature water bath set at 37° C. The five minute incubation period was found to be ideal for demonstrating the lowering of the adrenal ascorbic acid following the addition of ACTH.

When the incubation period was extended to 15 minutes, there were no differences between the ascorbic acid concentration of the experimental adrenal and the control one.

Following incubation the tubes were placed in cool water and each adrenal was removed to a tube containing 5 per cent trichloroacetic acid to be analyzed for ascorbic acid. Next, a one milliliter aliquot was removed from each buffer medium and placed into appropriate tubes containing trichloroacetic acid, to be analyzed for ascorbic acid. The remaining buffer medium in each tube was then analyzed for cortical hormones.

The cortical hormones were extracted from the media by the addition of 5 milliliters of a chloroform-ether (2:3) mixture to each tube. The tube was stoppered and shaken 100 times by hand. The stopper was removed and rinsed off into the tube with the chloroform-ether solution. The tube was centrifuged at a moderate speed for five minutes. The spinning separated the two phases with a slight protein layer interface. The upper waterlayer was aspirated off with a fine-tipped pipette and discarded. Sodium sulfate was added to the remaining chloroform-ether solution to remove all the remaining water. The tube was again centrifuged. The sodium sulfate packed down in the bottom of the tube, carrying the protein interface layer with it. The supernatant solution, containing the dissolved cortical hormones, was decanted into a second (dry) tube. The first tube was washed a few times with the chloroform-ether solution and the washings added to the second tube. The latter tube contained the chloroform-ether extract, which was then evaporated to dryness in a vacuum desiccator at 50° C.

The dry residue was dissolved in 3 milliliters of reagent grade methanol and was transferred to a quartz cuvette of a Beckman model DU spectrophotometer. The wave length was set at 240 millimicrons and the tubes were read against a methanol blank. Tubes containing known amounts of cortisone acetate dissolved in buffer solution were analyzed simultaneously with the experimental tubes, and the cortical steroid concentrations were calculated according to Beer's Law.

The above procedure for the extraction of cortical hormones was identical with that described by Saffran and colleagues. These workers confirmed the validity of their chemical procedures by the use of a biological assay specific for adrenocortical hormones (Speirs and Meyer).

It was found that the addition of ACTH resulted in a significant decrease in the adrenal ascorbic acid, which was not recovered from the surrounding buffer medium. Concomitant with the disappearance of the ascorbic acid, there was an increase in the cortical hormones recovered from the buffer medium. Since there is very little preformed hormone in the gland, the addition of ACTH undoubtedly caused an increased

synthesis of the hormones. Thus, since ascorbic acid is not attached to the steroid molecule (Vogt, Hechter), is not incorporated into the steroid molecule (Burns), and is not destroyed by ACTH (Sayers, present study), then one must conclude that in the above preparation, ascorbic acid was utilized in some metabolic process related to the synthesis of the cortical hormones.

In spite of the great accumulation of data over the past few decades, it appears that not one specific function of ascorbic acid can be satisfactorily explained. From the evaluation of the present study, and in light of the available knowledge, it would be difficult to correlate the *in vivo* and the *in vitro* results as being part of one specific function of the vitamin. The role of the vitamin in maintaining connective tissues does not seem to be related to its apparent role in metabolic processes in the adrenal, and perhaps other glands of great activity, e.g., the pituitary, and corpus luteum. Perhaps the common denominator for the actions of ascorbic acid may be related to its supportive or "permissive" role in the cells.

AMERICAN LITERARY NATIONALISM AFTER THE WAR OF 1812: 1815-1825

by HENRY BIRNBAUM*

Nationalism, a political and social philosophy which has significantly affected the lives of individuals and nations in the years since the American and French Revolutions, has more and more become the subject of scholarly study. The essence of this philosophy lies in the theory that the national state deserves and requires supreme loyalty above all other loyalties. As a philosophy, it influences the whole of national life and affects not only the programs of political parties but also the daily behavior of members of society. The influence of nationalism on the politics and economics of the United States has received considerable study by historians, but the effect of nationalism on culture has not been comprehensively examined. The special area of American culture on which this study concentrates is literary nationalism in the years from 1815 through 1825.

The present research carries forward the studies in nationalism formulated and directed by Bolwell at The George Washington University. It is the third in the planned series of projects on literary nationalism. Already completed are the doctoral dissertations of Cole (1939) which presented a large amount of nationalistic expression for the period 1775-1800, and of Coberly (1949) which made a detailed examination of the literature of the years 1800-1815. The four divisions of the subject used by both Cole and Coberly were again employed:

I. Writings concerning Nationalism

II. Writings concerning the Theme of a National Literature and a National Culture

III. Nationalistic Literary Exploitation of American Themes

IV. Cultural Features with Nationalistic Implications.

The first division is concerned primarily with the expression of the principles of nationalism, with the contributions made by active political leaders to specialized programs such as economic nationalism, and with the support given to such programs by writers and editors. The second division concentrates on the demand for a national literature, the description of the obstacles to its fulfillment, and suggestions for overcoming those obstacles. The third presents the exploitation of American materials and themes in response to the demand described in the previous division. The fourth division, though not intended as a substitute for more intensive studies by social historians, presents evidences of nationalism in cultural areas which are related to and affect literature. The items included in this study are based upon an examination primarily

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of the fiction, poetry, drama, and essays which were published between the years 1815 and 1825. These are supplemented by the findings and opinions of many scholars who have studied special aspects of the literature and the nationalism of the period, and by letters and addresses made during those years. Although nationalism had a considerable effect upon the literature of the years which followed closely the War of 1812, it is not claimed that nationalism was the only force in the growth of literature during those years.

Immediately following the War of 1812, nationalism flourished under the active encouragement of congressional leaders and journalists. Both sought to develop programs of political, economic, and military nationalism. Their efforts, similar to those of previous decades, seemed to be more effective because of the recent "successes" in the war. Nationalism was stimulated by the publication of articles and poems in contemporary magazines and newspapers specially designed to awaken a pride in the nation and a sense of cohesiveness. While such publications seldom outlined a specific course of action, they frequently described "national character", "national feelings", "national glory", and the like. Paulding, for example, stated that he wished "to awaken a national feeling, distinct, as much as possible". Other writers, such as Solyman Brown and Timothy Dwight, wrote of the responsibilities of the American citizen to the national state. In so doing, they attacked the factions represented by Federalism early in the decade and by Southern sectionalism after 1820. Nationalists denounced foreign institutions by deriding European decadence. Both Niles and Paulding made comparisons of conditions in the United States and England in which America benefited by the comparison. Contemporary periodicals published articles on "the inculcation of national precepts by having them delivered from father to son, with the earnestness of religion", and on the indoctrination of children with patriotic sentiments.

After 1815 Americans displayed a sense of assurance in their own independence—an assurance which was probably the result of the growth of the nation economically, geographically, and demographically. At the same time, however, this pride in the nation was threatened by contemporary "dangers" resulting from the resentment of defeated New England Federalists, the growing sectionalism of the South, and the possibility of a third war with Great Britain. Each of these dangers served the nationalist as a foil by which he might further his own program of encouraging national unity and a strong central government. The dangers themselves serve to emphasize the transitional character of the period. The decade saw the decline of Federalism, the rise of sectionalism, and the beginning of Jacksonian democracy.

The writings concerning nationalism were perhaps the best indicators of the changes which were taking place. The years from 1815 through

1825 yielded a much smaller quantity of essays devoted to the theory and principles of nationalism than had earlier decades. In the period 1775-1800 it had been necessary to create a sense of nationality. From 1800 through 1815, the idea of American nationality required continual reaffirmation. After 1815, however, it was accepted. Thus in place of theoretical and general essays, writers and political leaders substituted writings on more specific programs: political nationalism, economic nationalism, and military nationalism. This turn from theoretical to practical aspects indicates that nationalists were directing their appeals to larger portions of the population. The base of American nationalism was expanding.

Political nationalists met the challenge of disunion by ridiculing faction and by attempting to turn public attention to British threats against American security. They supported internal improvements such as roads and canals which would bind the nation, improve communication, and encourage national expansion. As the threat of a third war with England was removed, foreign policies were promoted which would establish the United States as "the natural head of the American family" in the Western Hemisphere. Although contemporary Americans did not fully realize it, the Monroe Doctrine was the most important political nationalistic statement of the decade.

Economic nationalism received support from writers like Niles and Mathew Carey and from congressional leaders like Clay and Calhoun. Merchants and traders from New England lost their battle to maintain a free-trade policy against the persistent calls for high tariffs and a protected economy. The *Weekly Register*, edited and published by Niles, was the unofficial organ of economic nationalism, preaching protection for war-born industries and self-sufficiency. Mathew Carey's three books on economics pointed out the need for a complex economy, fully protected in the early stages of its development. A complex economy, he predicted, would result in national prosperity.

Military nationalism was actively sponsored by Calhoun and Clay, and supported by Niles, Paulding, and western editors such as William Hunt of Kentucky. It received its impetus from the threat of a third British invasion during the first five years of the decade. Both Niles and Calhoun exploited this danger to encourage military expansion. Niles regularly reported on British schemes and called for an enlarged army, additional fortifications, and more ships for the navy. With the reconciliation effected by British and American diplomats, military nationalism suffered a temporary reversal caused by reductions in federal military expenditures. Throughout the period, Paulding was a spokesman for an enlarged navy. His series on naval history was written not only to present a record of American naval exploits but to create a "rallying point" for national allegiance.

The problem of the nationalist in encouraging a native literature which exploited American themes was fundamentally different from the problems of other programs. The non-literary programs had developed more fully and were receiving the active support of prominent Americans in all walks of life, but the nation's literature lagged behind. The apathy of the public towards literature was lamented, and the identification of literary progress with the growth of American civilization was made primarily by intellectuals. Nevertheless, native writers had still to gain popular approval. The purpose of the literary nationalist was to accelerate literary progress by overcoming the dependence on English books and by developing a more generous environment for native writings. Although he sought to stimulate the use of American materials, he was unfortunately concerned more with increasing the quantity of native writings than with improving their quality.

The demand for a national literature which was created in the years before 1815 continued and, in fact, received added impetus from the post-war confidence and the "literary war" between the United States and England. This war of books and reviews served nationalists in their program to urge an independent literature. To this end they attacked British reviews and travel books. Critics and writers exposed British "calumniators" and "hirelings", satirized English travelers, created a pseudo-travel literature which poked fun at British travel descriptions, and chastized American Anglophiles. These same critics and reviewers advocated a positive and conscious native effort to use American scenes and characters in literature. Such an effort, they emphasized, was important to the independence and growth of the country. Writers like Paulding, William Tudor, Edward Everett, Walter Channing, Edward Channing, and John Neal all argued that one of the major functions of a national literature was to stimulate a love of country by displaying the superiority of American life. Like their predecessors, critics of the post-war decade took four steps to overcome America's "literary delinquency" and to encourage patriotic writings: (1) they listed native materials which might be exploited; (2) they expressed confidence in the literary destiny of the United States and urged native critics to favor their fellow writers; (3) they attacked imitators of foreign literary models; and (4) they examined the limitations placed upon the growth of literature. An examination of the response of writers to those four steps shows clearly that critics were most successful in getting writers to use American materials and that they were least successful in breaking the bonds of dependence.

Numerous articles in the periodicals presented a catalogue of native materials for literary exploitation. These articles ranged from suggestions for the use of contemporary life to the advocacy of Indian legends. Chief among the materials recommended were those to be

found in history. The events of the colonial period, especially the exploits of the Puritan settlers and the struggles of the pioneers, were recommended. The pre-Revolutionary period was favored by critics because of the romantic notion that remote materials would make better subjects for fiction and poetry. For similar reasons, critics were reluctant to recommend the events of the American Revolution; it was felt that they were too recent for effective literary exploitation.

The function of the literary critic received special attention. Three separate views on the subject could be discerned: (1) that native writers should be treated with preference, but only when their works had a fair standard of merit; (2) that native writers should submit to the standards of European critics in order to guard against imperfections and to develop literary perfection; and (3) that native writers, despite their flaws, should be given a generous reception. This last view was given strong support by reviewers and editors because of the notion that American literature required only encouragement, not direction.

Among the obstacles to literary growth, the following were listed: the dependence on British models; the comparative youth of the nation; the utilitarian demands of American life; the strong political interest of the public, and hence the general apathy towards artistic endeavor; the lack of an effective copyright thereby forcing publications into offering but weak competition to British books; and the lack of libraries and cultural societies to encourage erudition. These views of American literary backwardness were offered essentially as constructive criticism and partially as rationalization of the failure of American writers to achieve first rank in the literature of the world. Despite this impressive list of obstacles, however, there was generally a high degree of satisfaction with the state of development of American literature.

The success of critics in developing the demand for a national literature is shown by the growing realization of the importance of literature to the advancement of culture. National materials were recognized as having a direct appeal to the reader, but this same reader generally used English writings as a standard of judgment. Here the nationalistic critic failed. As literacy and the population increased, so did the importation of English novels, poems, and plays. American writers, still serving their apprenticeship, were faced with unfair competition. This handicap may best be seen in the drama. English plays, assisted by British acting companies who regularly toured the larger cities, were crowding American production off the stage. The nationalist complained bitterly against such conditions, but with little success. Without an adequate copyright, native writers, printers, and booksellers had to submit to the economics of the marketplace where the English writer was secure. Therefore, American writers, under the urging of critics, wisely turned to native themes and materials but continued to use British books as a pattern of excellence.

American writers, encouraged by the demand for native productions and the success of the young Cooper, produced a large number of novels and poems which exploited native themes and materials. Many novels had their settings in the United States and contained descriptions of American scenery, especially those scenes which had an historical association. Several poems were written in praise of American rivers, and America's natural resources were praised for their abundance and variety.

The American people were described as having a greater degree of freedom and individuality than Europeans. As characters in novels, they were usually types. The pioneer and the settler, for example, were employed by Paulding and McHenry to show the courage of Americans in extending civilization westward and to affirm the influence of the frontier in Americanizing the immigrant. The Yankee was exploited as a type who, free of the burdens of a highly organized social structure, could apply his industry to the practical problems of life in the new world. Women were shown to be more self-reliant. The American was given the general virtue of being especially adapted to the new continent because of his democratic attitudes. The exploitation of the Indian as a literary type pleased the nationalist because it turned the attention of writers to native materials and contributed to the stock of folklore. American civilization was praised as a new world experiment offering equal opportunity to all citizens and free of class distinctions. Some writers declared that the average of intelligence and manners was higher than that of Europe. Native progress in science and industry received its share of praise. Neal and Dwight boasted that new scientific discoveries were quickly adapted to practical uses. Some writers even asserted that their prisons were superior to those on the other side of the Atlantic.

The most abundant and evident nationalistic exploitation was in the field of history. The colonial period was used in several novels in which colonial manners and historical figures were displayed. Puritan characters were thought by some to have the same stern but patriotic features as the clansmen of Scott's novels. Poems and novels about the Revolution were most numerous, despite the misgivings of critics who felt that the Revolution was too recent for literature. Using the "divided-love" motif, by which hero and heroine are separated by opposing national loyalties, writers succeeded in conveying the righteousness of the Revolution by having the Tory dramatically converted to patriotic principles. Many military and naval heroes were praised, but the most important national hero to be exploited was George Washington. He served as a principal device of the writer who sought to infuse into his novel of the Revolution a sense both of authenticity and sanctity. Washington was always delicately pictured—a static portrait—painted for

admiration. As such, he usually played no more than a passive role, but his appearance in fiction served to intensify the contemporary love of Americans for the "father of our country". The incorporation of Washington into fiction, of course, ran counter to the warnings of critics who felt that he was too sacred for fictional exploitation. Although he had been used earlier in the drama, it took the leadership of Cooper who sketched him in *The Spy* to overcome this taboo in the novel.

The effect of nationalism on areas of culture other than literature still awaits detailed study by social historians. Yet one cannot help but note how intricately the contemporary nationalism was woven into the fabric of the nation. In the post-war decade, new organizations were formed—historical, political, scientific, and military—which added to the growth of American nationalism. Leading writers and critics were prominent members of these societies which sought to collect and preserve Americana and to commemorate national events. These literary leaders also supported other cultural programs, such as the movement for a national university and the effort to create a native variant of the English language. Contemporary nationalism was so generally pervasive that it had already begun to infect American Protestantism with an anti-Catholic nativism, and was also helping to change the newspaper into a tool for nationalistic indoctrination, showing how directly related was the literary nationalism of the period to the whole of American culture. It is surprising, therefore, that contemporary political problems did not show themselves more clearly in the belletristic writings of the decade. Perhaps in this period of continuing literary apprenticeship, patriotic writers were unwilling to expose their major national problems.

With the emergence of Cooper and Bryant as major writers, the United States had produced at least two literary artists whose works were valued on both sides of the Atlantic. Irving, well received by British readers, was not popular with American nationalists because of his admiration of England. A significant characteristic of the literature of the years between 1815 and 1825 was the acceptance of the novel and its service in exploiting American themes. The similarity of the thinking by literary nationalists during this period to those of previous decades makes it evident that the post-war nationalism was the natural continuing development of the nationalism from 1775 to 1815. In the post-war period, however, there was a gradual shift from a concentration on the defense of American literature against foreign criticism to a more positive program of developing native literature. In place of defensive literary nationalism, the end of the decade revealed an increase in imaginative literary production and a growing acceptance of such works by American audiences. By 1825 it was possible to perceive the beginning of "the sweep of assertion" in American literature.

STUDIES OF PHENOLIC COMPOUNDS AS CHEMOTHERAPEUTIC AGENTS AGAINST POLIOMYELITIS VIRUS

by PATRICIA ELLY*

The search for chemotherapeutic agents effective against diseases caused by the smaller viruses has not been as fruitful as that for protozoal, bacterial, and rickettsial infections. The larger viruses, comprising the psittocosis-lymphogranuloma venereum group, respond well to the antibiotics, chloramphenicol, aureomycin, and terramycin, but these chemotherapeutic agents have not been reported to affect the smaller viruses. This study was undertaken to discover new compounds which would be inhibitory to virus growth and to investigate such virus inhibitors from the standpoint of their modes of action. The virus under study was the Y-SK strain of Type 2 poliomyelitis virus. The choice of phenolic compounds as inhibitory agents was suggested early in the investigation by the finding that hexylresorcinol was an effective agent.

The test system used in this study is based on the use of the roller tube technique of *in vitro* tissue culture. Explants of monkey testicular tissue were incubated, usually for four or five days, at which time viability of tissue was evident as indicated by the extent of proliferation of fibroblasts. In routine testing of the efficacy of each chemical, virus inoculum of 100 LD₅₀ and the desired concentration of drug were added. Effectiveness of a given compound was indicated by its ability to prevent, over a wide range of concentrations, the fibroblastic degeneration normally produced by the virus. An inhibitory index was established as the ratio of the highest concentration of drug not causing damage to the tissue, to the lowest concentration inhibiting virus. Compounds failing to have as great an inhibitory ratio as sixteen were not investigated further. Of the nineteen compounds having an index of sixteen or greater, three were unable to inhibit virus when it was added 24 hours prior to or 24 hours after the addition of drug. The following compounds were able to inhibit virus in pre-infected tissue and also to prevent the effects of virus inoculated 24 hours after drug: seven aminophenols (4-amino-2-diethylaminomethylphenol, 4-amino-1-naphthol, 2-amino-1-hydroxytoluene, *p*-aminophenol, *p*-benzylaminophenol, *o*-hydroxybenzal-*p*'-hydroxyphenylimine, and *p*-methylaminophenol); seven diphenols (catechol, hydroquinone, dichlorohydroquinone, toluhydroquinone, phenylhydroquinone, hexylresorcinol, and naphthoresorcinol); and the triphenolic acid, gallic acid. As is suggested by the above mentioned compounds, in general more than one hydroxyl group is required for virucidal activity in phenolic compounds. The position of the second hydroxyl group is also important,

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hydroxyl groups in the para position being more effective than those in the ortho position, which in turn are more effective than those in the meta position. The exception to the above requirement for a second hydroxyl group is replacement with an amino group. In this instance, addition only in the para position produced an effective compound. Substitution on the hydroxyl or amino group rendered the compound ineffective, except where a benzyl group was substituted on the amino group. Additional products of these parent compounds may or may not alter their effectiveness. However, the result cannot be predicted on the basis of the available evidence.

Experiments conducted to determine at what level the drugs were acting showed that all but four were able to exert their virucidal properties upon the virus within the host cell. Infected tissue was exposed to drug for 24 hours, at twice and five times the minimal effective concentration. At the end of this time, the drug was replaced by complete medium and incubation was continued. Repeated washings of the tissue were made during the next 48 hours in an effort to remove excess drug. Tissue was observed frequently during the period of prolonged incubation for evidence of virus-induced degeneration of the fibroblasts. In order to insure complete removal of the drug from the tissue environment, explants from each of the experimental tubes were suspended in other culture tubes containing fresh tissue with actively growing fibroblasts. In four instances virus was detected, at both drug concentrations, only after the above procedure had been carried out. The four drugs which were unable to exert their effect on the virus at the intracellular level were 4-amino-1-naphthol, *p*-aminophenol, gallic acid, and toluhydroquinone. It was assumed that the remaining eleven compounds were able to penetrate the host cell and attack the virus infection which had been initiated.

Subacute chronic toxicity tests of the fifteen effective compounds were done on mice. Drug was incorporated into the special diet prepared for this purpose. The amount of food consumed and the weight of the animals were determined regularly for a twenty-one day period. Any decrease in weight indicated too great a concentration of drug. New animals were started at lower concentrations, until a quantity of drug was reached at which there was some gain in weight. The per cent of drug tolerated by mice in their diet was determined in the event that these effective compounds might be tested in higher animals infected with poliomyelitis virus.

Twenty-six naturally occurring compounds were tested for their ability to antagonize the inhibition of virus by drug. These included vitamins, hexoses, amino acids, and the tripeptide, glutathione. The appearance of virus in the presence of both inhibitor and antagonist indicated reversal. Glutathione was able to reverse the inhibition brought about by all but three of the drugs, hexylresorcinol, naphthoresorcinol, and *o*-hydroxy-

benzal-*p*-hydroxyphenylimine. This was taken to indicate inactivation of sulphydryl enzymes by the inhibitor, since glutathione is known to reactivate such enzymes when they have been rendered inactive by oxidation or by disulfide formation. Since quinone is a sulphydryl enzyme poison, the oxidation of the hydroquinones to quinones and aminophenols to quinonimines by the tissue is indicated. The vital sulphydryl enzyme or enzymes could be present as a constituent of the virus particle, or the function of the enzyme may be a necessary step in the metabolism of the host in its production of virus.

Hydroquinone was reversed by three of the hydroxy amino acids, hydroxyproline, serine, and threonine. Benzoquinone, which was also tested and found to be effective, was reversed by the same three amino acids. Phenylhydroquinone was reversed by only two of the hydroxy amino acids, hydroxyproline and threonine, and by asparagine and cysteine as well. Dichlorohydroquinone was reversed by threonine alone, while the reversal of tolhydroquinone was not observed. Four antagonists, asparagine, histidine, threonine, and cystine reversed the inhibition of catechol. Other than glutathione, histidine was the only compound to bring about the reversal of gallic acid. Reversal of *p*-aminophenol was accomplished with asparagine, hydroxyproline, threonine, tryptophane, and cystine. *p*-Methylaminophenol and *p*-benzylaminophenol were reversed by similar compounds: asparagine, histidine, hydroxyproline, serine, threonine. The additional reversal of *p*-benzylaminophenol by pyridoxine was the only example of a vitamin acting as an antagonist. Vitamins which failed to bring about the reversal of any of the effective phenolic inhibitors were ascorbic acid, inositol, nicotinic acid, para-aminobenzoic acid, calcium pantothenate, riboflavin, and thiamine. The sugars, glucose-1-phosphate and fructose-6-phosphate, and the amino acids, methionine, phenylalanine, tryosine, glutamic acid and its monamide, glutamine, aspartic acid, and proline also were unable to exhibit any reversing action against the inhibitors.

The mechanism involved in these reversals is not yet understood. An explanation suggested for the reversal by threonine is based on the knowledge that beta-hydroxy butyrate dehydrogenase is a sulphydryl enzyme, and the addition of excess threonine may offer an alternate supply of the reactant.

STUDIES ON NEURO-MUSCULAR FATIGUE

by KATHERINE VIRGINIA GREENE *

Three different experimental attacks were made upon the ability of skeletal muscle in a laboratory animal to do work. The first part of the investigation was devoted to an analysis of the effects of varying the frequency of stimulation applied to the sciatic nerve and measuring the response of the soleus and gastrocnemius muscles. The second part of the study involved the analysis of the effects of variations in carotid blood pressure upon the response of the soleus muscle. The third phase of the work was concerned with the influence of certain drugs upon the blood pressure and soleus muscle response.

The cat served as the experimental animal throughout this investigation. The Sherrington method of decerebration was employed to eliminate the use of anesthetics during the course of experimentation. Ether anesthesia was used during the decerebration process. Experimental measurements were not started until approximately one hour after decerebration so that the ether influence was no longer tangible.

Carotid blood pressures and the skeletal muscle tension levels were the end point variables measured and compared. They were measured in terms of resting levels lasting long enough to establish the best "steady state" obtainable before the application of a stimulus or the injection of a drug.

This study has employed the behavior of the nerve-muscle preparation *in situ*. The sciatic nerve was severed and stimulating electrodes were slipped over the peripheral end. The muscles of the hind limb were denervated and the muscle attachments at the trochanter were cut. This procedure reduced any accessory mechanisms from contributing to the response of the muscles being studied. The tendons of the soleus and gastrocnemius muscles were detached from the os calcis and attached to recording levers. The muscles retained their regular blood supply, and every effort was made to prevent any disturbance to their normal vascularity.

The blood pressures were measured in mm. of Hg. and most of the muscle responses were recorded as mm. "pull"; or tension extent. In the experiments upon tension areas and time required for total fatigue, the results were recorded in sq. cm. and gram mm. tension respectively; these are functions of tension "pull", or extent.

The first part of the investigation supplied the evidence for the so-called stimulation frequency of "choice", which was used in the succeeding parts. The second phase developed the responsiveness of the

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soleus muscle, in relation to carotid blood pressure changes, while the muscle was contracting to the "choice" stimulation frequency of 35 per second. The blood pressure changes were all of reasonable physiological origin, such as spontaneous or unprovoked changes, variations due to moderate stimulation of the vagus and sciatic nerves, and the response to blood volume increase caused by transfusion.

The third phase of the investigation, which employed the stimulus frequency of choice and the data gathered from blood pressure influence upon muscle tension, concentrated upon the pressure and tension responses to various pressor and depressor chemical agents. These were used in animals with and without bulbo-capnine treatment. Adrenalin and mecholyl were used as a pressor and a depressor agent acting at the autonomic nerve endings to alter vascularity. Pitressin and histamine were chosen as a pressor and a depressor agent acting upon peripheral vascularity by direct smooth muscle effects in the peripheral blood vessels.

Bulbo-capnine was used in the second phase as a modifier of neuromuscular and muscle-vascular responsiveness. It was also employed in the third group of experiments with the object of determining more about its ability to encourage rapid fatigue. Bulbo-capnine is an alkaloid extracted from the tubers of *Corydalis cava*, or "Dutchman's breeches". This drug has been observed to impose a peculiar type of muscular "fixation" upon experimental animals which resembles the plastic tone seen in human patients suffering with dementia praecox. Patients with this malady may experience, from time to time, involuntary convulsive behavior referred to as catalepsy, which may give way to states of quiescence during which the body may be in a state of plastic tone. In this latter state, the body of the patient may be moulded into both normal and grotesque postures which are often held or "fixed" for considerable periods of time. The patient appears to have little ability, or desire, to alter these postures when they are imposed upon him.

The results were presented in sixteen experimental groups under the three main categories of the investigation. Sixteen statistical tables, fourteen graphs, and forty plates were used to exhibit the data.

The fatigue-syndrome was discussed from the standpoints of definition, causation, and prevention. Physiological seats of fatigue were pointed out within the organism. These factors were discussed relative to their importance in this investigation.

THE EFFECT OF VARYING THE FREQUENCY OF STIMULATION UPON THE RESPONSE OF THE SOLEUS AND GASTROCNEMIUS MUSCLES

1. The frequency of stimulation required to produce soleus muscle contraction fusion, or tetanus, was 18-20 stimuli per second.

2. The frequency of stimulation required to produce gastrocnemius muscle contraction fusion, or tetanus, was 20-25 stimuli per second.

3. The optimal frequency of stimulation for the soleus muscle was 20-25 per second, while that for the gastrocnemius muscle was 40-45 stimuli per second. By optimal frequency was meant that stimulation rate which would produce the greatest extent of contraction for the longest time. When there occurred very little change in the level of response over a period of time, it was called a "steady state".

4. The soleus muscle responded with the best steady state in the order 20, 35, and 50 stimuli per second, with no difference of statistical significance between the frequencies of 20 and 35.

5. The gastrocnemius muscle responded with the best steady state in the order 50, 35, and 20 stimuli per second. Each frequency was significantly different from the other indicating that the gastrocnemius was more definitely attuned to stimulation rates than was the soleus muscle.

6. Experimental evidence showed that a stimulation frequency of 35 per second was the most suitable for both muscles when responding simultaneously to stimulation of their common sciatic nerve. Therefore, a stimulation frequency of 35 per second was called the frequency of choice.

7. When contraction or tension areas were measured planimetrically, after using the same stimulation frequencies as above, it was found that the frequency of 35 per second proved to be the frequency of choice by this method.

8. The response used to determine the pattern of behavior to the different stimulation frequencies were obtained near the beginning of the fatigue experiments, since the muscles were most agile then. When the various frequencies were applied to the control animals at successive hours during the fatiguing process, the relationships between the different frequencies remained the same; only the extent of tension changed, showing a relative decrease for all frequencies.

9. When the frequency of 35 per second was used to determine total time required for complete fatigue, it was observed that the mean time for the controls was 7.16 hours. The animals died at this time, so that absolute fatigue occurred simultaneously with death.

It was concluded that the effect of varying the frequency of stimulation upon skeletal muscle was due to the individual periodicities of the muscles themselves. Stimulation of the muscles directly did not give as sharp a differentiation in pattern response to 20, 35, and 50 stimuli per second as did the stimulation of the sciatic nerve, but there was no reason to believe that the myo-neural junctions were inhibiting any frequency.

Bulbocapnine decreased the ability of the muscle to respond sharply

to different frequencies when stimulated through the sciatic nerve or directly. The muscle-vascular system appeared to be at fault because an improvement of blood flow through the muscle by the transfusion of Ringer's solution into the femoral vein improved the response of the muscle to both nerve and direct stimulation.

Interpretation of the degree of fatigue in a muscle is erroneous except at the optimal frequency of stimulation for the muscle under observation. Returning to the optimal frequency from any other will quickly improve the response.

Fatigue in the peripheral neuro-muscular system does not become absolute until the death of the animal, providing no means have been employed to disturb myo-neural conduction or muscle-vascular dynamics.

THE EFFECT OF VARIATIONS IN CAROTID BLOOD PRESSURE UPON THE MAINTENANCE OF SKELETAL MUSCLE TENSION

10. The muscle tensions in the control animals responded parallel to blood pressure changes. When the blood pressure variations were spontaneous, decreased by vagus nerve stimulation, increased by sciatic nerve stimulation, or increased by transfusion, the muscle—responding to 35 stimuli per second—followed the blood pressure changes in every instance.

11. The amount of blood pressure response was greater than the tension response in all of the above experiments except one. In the transfusion series, the mean muscle tension increase was 25–35 per cent greater than that observed in the blood pressure.

It was concluded that there was a direct relationship between carotid blood pressure and skeletal muscle tension in most, if not all, physiological conditions. Exceptions were observed when non-physiological situations were imposed upon the animal, such as large doses of adrenalin, and pitressin, or when the preparation was injected with a dose of bulbocapnine which, in the normal animal, is adequate for producing catatonia.

THE EFFECT OF CERTAIN DRUGS UPON THE RELATIONSHIP BETWEEN CAROTID BLOOD PRESSURE AND SOLEUS MUSCLE TENSION

12. Adrenalin in doses of $\frac{1}{2}$ cc., or less, 1:100,000 per kilogram of body weight caused either increase or no change in blood pressure and an increase in muscle tension in all instances. The muscle tension increase was a unique finding. The tension increased almost twice as much as did the blood pressure. No other experimental pressor agent approached the ability of adrenalin, in small doses, to increase muscle tension.

13. Adrenalin in doses of 1 cc., or more, 1:100,000 per kilogram of

body weight caused an increase in blood pressure but a decrease in muscle tone.

14. Pitressin in doses of 1 unit per kilogram of body weight caused the same type of result in the controls as was observed with large doses of adrenalin, but for a different reason.

15. Mecholyl, in doses of $\frac{1}{2}$ cc. 1:100,000 per kilogram of body weight, caused a decrease in both blood pressure and muscle tension.

16. Histamine, in doses of $\frac{1}{2}$ cc. 1:25,000 per kilogram of body weight, caused a decrease in both blood pressure and muscle tension, similar to that observed with mecholyl, but for a different reason.

It was concluded that pressor and depressor drugs influenced the degree of skeletal muscle tension observed indirectly by altering the muscle-vascular mechanism. The direction of the changes in carotid blood pressure and muscle tension were often the same, but there was frequently a statistically significant difference in the amount of change when the controls were compared with the experimental animals. Reversal effects were noted with agents such as adrenalin and pitressin, which decreased the muscle-vascular bed.

THE EFFECTS OF BULBOCAPNINE TREATMENT UPON BLOOD PRESSURE AND SKELETAL MUSCLE TENSION

17. Bulbocapnine reduced the mean fatigue time from 7.16 hours in the control animals to 2.91 hours. Absolute fatigue and death occurred simultaneously in the controls, but the bulbocapnine-treated animals experienced complete muscular fatigue while the experimental animals were in good condition. Muscle tension returned when the animals were kept until the drug was excreted or otherwise destroyed.

18. It appeared generally impossible for bulbocapnine-treated animals to develop steady states of response in muscle tension, like those observed in control experiments. The drug removed one or more of the physiological requirements necessary to maintain and perpetuate skeletal muscle tension.

19. Bulbocapnine decreased the convincing differences in the response to the stimulus frequencies of 20, 35, and 50 per second, even when the blood pressures were as high or higher than in the controls.

20. There was parallelism between the response of muscle tension to blood pressure changes when the blood pressure was changing spontaneously, or responding to vagus and sciatic nerve stimulation. Bulbocapnine decreased or destroyed this parallelism. The skeletal muscle tension appeared to be static, or in a state of "fixation".

21. Spontaneous changes in blood pressure, which were often observed in control animals, were usually reduced or changed to a steady or static state. Carotid blood pressure usually decreased markedly for 15 to 30

minutes after intraperitoneal injection, and then decreased slowly until the drug effect was worn off.

22. In the transfusion experiments, bulbocapnine did not destroy the parallelism between the increase in blood pressure and muscle tension. The responses were the same and of the same order of magnitude.

23. Bulbocapnine reduced or destroyed the effects of both small and large doses of adrenalin upon muscle tension. The blood pressure responses to both small and large doses of adrenalin were markedly reduced.

24. Bulbocapnine blocked, partially or completely, the effects of mecholyl, pitressin, and histamine upon skeletal muscle tension.

25. Bulbocapnine opposed the effect of mecholyl on blood pressure slightly, but had no effect on the blood pressure responses in the pitressin and histamine experiments.

It was concluded that the fatiguing effects of bulbocapnine could be explained by the apparent "fixation" of the peripheral vaso-motor system. The muscle vascularity was stabilized in the presence of pressor and depressor agents which acted chiefly upon autonomic nerve endings in the blood vessels of the muscle, or upon the smooth muscle of the vessels themselves.

The influence of bulbocapnine was most pronounced upon the influence of adrenalin, where the muscle tension effects were almost completely blocked and the carotid blood pressure increased only a small fraction of that exhibited by the control animals. It is suggested that such a pronounced stabilization of peripheral response may be an important contributing factor to the static behavior observed in catatonia.

STUDIES ON THE PHYSIOLOGY OF PINE MYCORRHIZAE

by EDWARD HACSKAYLO *

Interdependence of organisms living in close association with one another is common in nature. Lichenous fungi in combination with algae, leguminous plants in combination with bacteria, and ecto- or endotrophic mycorrhizal fungi within roots of woody and herbaceous plants are widespread examples of this phenomenon. In ectotrophic mycorrhizae specific soil fungi encompass and invade the absorbing roots of trees, creating a characteristic dual organism structure which has been the subject of study from morphological and physiological aspects since the latter part of the nineteenth century. To date there is no agreement among workers on the mechanisms involved during mycorrhizal formation or how they function after becoming established although many theories have been advanced.

It had been shown previously that mycorrhizal formation is influenced by several factors among which are (1) the concentration of nutrients in the soil and (2) the presence of an excess of soluble carbohydrates within the roots of trees. There is evidence also that mycorrhizal fungi are greatly stimulated by exudates from living roots. After mycorrhizae have formed, the fungi are functional in the transfer of inorganic and organic nutrients from the surrounding medium into roots of the host plant. The nutrients are then translocated to other portions of the plant. Of the various techniques used to study the physiology of mycorrhizae, radioactive isotopes and excised root cultures have become valuable assets in recent years.

The writer has been concerned with investigations representing certain restricted phases of the mycorrhizal relationship. Using aseptic techniques throughout, the work consisted of (1) developing a new technique for pure culture syntheses of mycorrhizae in the laboratory, (2) pure culture synthesis experiments involving *Pinus virginiana* Mill. and Swedish fungi, (3) the influence of glucose on the production of one or more growth-promoting metabolites by excised roots of *Pinus silvestris* L., and (4) a study of the effects of glucose on mycorrhizal development in intact plants of *Pinus silvestris* grown in pure cultures.

The use of quartz sand moistened with a nutrient solution had long been the standard procedure for studies of mycorrhizal syntheses in aseptic cultures. Early in 1952 the writer began experiments at The George Washington University in an attempt to find a medium with better physical properties. Terra-Lite moistened with a nutrient solution adjusted to pH 4.0 was autoclaved in culture flasks followed by

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introduction of aseptically germinated *Pinus virginiana* seedlings into the flasks. Inoculations of the substrate were made with mycelium of *Lepiota rhacodes* (Vitt.) Quel. After four months copious mycorrhizae had formed on the root systems of the pine plants. Root development and growth of the shoots was excellent. Refinement of this technique was carried out in Uppsala, Sweden, using *Pinus silvestris* together with *Boletus variegatus* (Sw.) Fr. and *Rhizopogon roseolus* (Corda) Th. Fr., known to be mycorrhizal on the tree species. Two month old plants were inoculated with mycelial suspensions of the above-mentioned fungi and abundant mycorrhizae developed in one additional month. The time previously required for mycorrhizal formation in similar cultures was reduced by this treatment.

Terra-Lite was proved more advantageous than sand in aseptic synthetic cultures because (1) it needs no previous cleansing as does sand; (2) it possesses a much higher water holding capacity; (3) the cultures need fewer additions of solution, thereby reducing possibility of contamination; (4) it provides excellent aeration conditions for both pine roots and fungi. Terra-Lite has basic properties and removes H-ions from the solution; consequently the nutrient solution must be adjusted to pH 4.0 prior to autoclaving in order to insure a pH of 5.2-5.4 in the sterilized substrate.

Using the Terra-Lite method, it was found that ectotrophic mycorrhizae could form on an American species, *Pinus virginiana*, with the Swedish fungi, *Boletus variegatus* and *Rhizopogon roseolus*. Inoculations with *B. luteus* (L.) Fr. and *Cenococcum graniforme* (Sow.) Ferd. and Winge were negative. These results suggest broad implications. If one fungus were found to be more efficient than another in the transfer of nutrients from the soil to the tree, its adaptation to other geographical regions as a mycorrhizal partner on other species might be of practical value.

Employing established techniques for growing excised pine roots in solution cultures, experiments were performed to study the effects of glucose on the production of a growth-promoting factor by excised *Pinus silvestris* roots. In a preliminary experiment the glucose concentrations ranged from 4 per cent to 0.5 per cent and the osmotic pressures of the solutions below 4 per cent were compensated with xylose. At the end of sixty days it was found that all the roots remained alive and best growth was at 4 per cent, decreasing to practically none at 0.5 per cent. Although the xylose was not utilized as a source of carbohydrate by the excised roots, it did not appear to have toxic effects. Excised pine roots were then grown or maintained in solutions ranging from 4 per cent to 0.05 per cent glucose and the osmotic pressures were compensated as above. The roots were inoculated with a mycelial suspension of either *Boletus variegatus* or *Rhizopogon roseolus* in a solution of 2 per

cent glucose concentration favorable to fungus growth. It was found that when grown in 4 per cent glucose, excised roots of *Pinus silvestris* induced greatest stimulation to the mycelia. Stimulation was irregularly less when the roots had been subjected to lower concentrations. The milligrams of mycelium per milligram of root based on dry weights followed a similar pattern. The amount of mycelium in the control flasks without roots was unaccountably greater than expected.

In agar plate assays consisting of roots grown as above surrounded by agar containing a mycelial suspension of *Boletus variegatus*, there was clear evidence that the roots grown at various glucose levels stimulated the fungus more when they had been grown at 4 per cent than those at lower concentrations. Uniformity in the decrease of stimulation was presumably caused by a slow diffusion of a stimulating substance from the roots.

Excised roots were grown also in solution cultures wherein the osmotic pressures were not compensated with xylose. The range of concentrations was from 6 per cent to 0.25 per cent glucose. When inoculated with mycelial suspensions of *Boletus variegatus* and *Rhizopogon roseolus* as above, it was found that greatest stimulation to the fungi appeared at 4 per cent and 6 per cent but decreased sharply at 2 per cent. The ratio of milligrams of mycelium to one milligram of root based on dry weights was higher at 6 per cent glucose and diminished regularly at lower concentrations. The mycelial development in control flasks (lacking roots) was only a fraction of those with roots. An agar plate assay showed greatest mycelial stimulation at 4 per cent glucose, diminishing regularly at the other concentrations.

Attempts were made to grow excised radicles of *Pinus silvestris* in Terra-Lite moistened with a nutrient solution. The substrate contained various amounts of glucose. The radicles grew to some extent at 4 per cent glucose but not at lower concentrations. When the concentration was increased from 4 per cent to 6 per cent or 8 per cent, the roots remained alive, however, there was evidence that little if any further growth occurred. An agar plate assay revealed that the roots stimulated mycelium of *Boletus variegatus* most when maintained at 4 per cent glucose, less at 6 per cent, and not at all at 8 per cent.

In these experiments the excised pine roots grown in solutions containing various concentrations of glucose stimulated mycelial production of *Boletus variegatus* and *Rhizopogon roseolus* as compared to the amount of mycelium grown in the absence of roots. There was also stimulation of *B. variegatus* by roots grown in Terra-Lite containing concentrations of glucose of 4 per cent or 6 per cent. It thus seems likely that the increased growth was due to the production of one or more diffusible compounds by the roots rather than to the amount of glucose present within the roots. Whether any influence of the glucose is related directly

to the composition of the compound(s) or to metabolic processes involved in its production is not known.

To test the effects of glucose in the medium on mycorrhizal development in intact plants, *Pinus silvestris* seedlings were grown in aseptic Terra-Lite cultures. No glucose was added to the initial medium but after sixty days it was added to the cultures in amounts resulting in a range of from 0.05 per cent to 2 per cent glucose. At the same time suspensions of *Boletus variegatus*, *Cenococcum graniforme*, or *Rhizopogon roseolus* were pipetted into the flasks. After an additional thirty days examination of the cultures revealed in all cases progressively heavier mycelial growth with increased concentrations of glucose. No mycorrhizae formed in cultures inoculated with *Cenococcum graniforme*. With *Boletus variegatus* and *Rhizopogon roseolus* the greatest percentage of short roots converted to mycorrhizae occurred at 0.5 per cent glucose. At this concentration also there was found the greatest percentage of coralloid mycorrhizae and the greatest thickness of mantles. Hartig net development was not very different for the two species of fungi. Few mycorrhizae formed in the medium containing 1 per cent or 2 per cent glucose. This would indicate that the metabolism of the root or of the fungus at those concentrations was so affected that hyphal penetration into the intercellular regions of the cortex was restricted. Three possible explanations for this are: (1) that the fungi were not producing pectin-splitting enzymes in great amounts at these concentrations; (2) that the roots were preventing hyphal penetration by production of one or more substances inhibitory to the fungi; or (3) that the roots had ceased production of one or more substances which would induce hyphal penetration.

THE ATTENUATION OF SECOND SOUND IN LIQUID HELIUM II

by WILLIAM BERT HANSON •

Liquid helium was first obtained in 1908 by Kammerlingh Onnes in the Leiden laboratory, but the discovery of the second order phase transition in the liquid at 2.186 K was not made until 1927. The liquid phases which exist above and below this critical temperature have strikingly different properties and are called "liquid helium I" and "liquid helium II" respectively. The liquid helium II phase has been found to exist at temperatures down to 0.01°K and it appears that a pressure of at least 25 atmospheres is necessary to create solid helium, even at absolute zero. This situation is brought about because of the small van der Waals forces between the symmetrical helium atoms and the high zero point energy which they possess due to their small mass. The zero point energy is in fact several times larger than the latent heat of the liquid, making liquid helium a true quantum liquid where macroscopic quantum effects should be observed.

The liquid-liquid transition temperature has been named the lambda point (λ -point) because of the similarity between the specific heat curve of the liquid in this region and the Greek letter lambda. F. London first proposed that the λ -transition might be an example of a Bose-Einstein condensation and that the λ -point was the temperature at which a finite fraction of the helium atoms condensed into their lowest quantum state.

L. Tisza started from London's hypothesis and derived a theory of liquid helium II which not only explained many of the known curious properties of the liquid but also predicted that it should sustain two different types of wave motion. He predicted that in addition to ordinary sound waves, liquid helium should also transport heat in the form of temperature waves. This brilliant prediction was verified seven years later when Peshkov first succeeded in exciting and measuring the wave velocity of these temperature waves, which came to be known as "second sound".

Tisza proposed that helium II consisted of two interpenetrating fluids, normal and superfluid, whose relative concentrations were functions of the temperature. Present theory postulates that the superfluid should have zero entropy and zero viscosity, whereas the normal fluid should possess properties much like helium I, i.e., have a finite viscosity and thermal energy. These definitions are somewhat different from the ones originally given by Tisza. The wave motion which takes place

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when the two fluids move in phase corresponds to pressure or sound waves. When the two fluids move in opposite phase there are no pressure fluctuations but the fluctuations in the concentration ratio of the two fluids give rise to temperature waves.

Landau independently arrived at a model for helium II starting from quantum mechanical considerations of the liquid at absolute zero. He was able to obtain an energy spectrum for the liquid and found that there should exist two different types of excitations. The low energy ones are the ordinary phonons which are encountered in the Debye theory of solids and their energies are given by the relation

$$\epsilon_{\text{phon}} = cp \quad (1)$$

where p is the momentum of the phonon and c is the velocity of ordinary sound. The high energy excitations he called "rotons" and their energies are given by

$$\epsilon_{\text{rot}} = \Delta + \frac{(p-p_0)^2}{2m} \quad (2)$$

where Δ is an energy gap, m is an effective mass for the roton, and p_0 is a momentum about which the roton momenta are clustered. These three constants must be determined from experiment. Landau also obtained a two-fluid model from this theory and showed that the total effective mass of the excitations per unit volume corresponded to the normal fluid density. The superfluid was just the background in which these excitations existed. Though he rejected the Bose-Einstein condensation hypothesis, Landau's theory nevertheless paralleled Tisza's in many respects.

When Pellam and Squire found that the absorption of first sound in helium II was an order of magnitude larger than would be expected from its known viscosity, Khalatnikov carried out a theoretical investigation to see if this could be explained on the basis of Landau's theory. Under the assumption that the rotons and phonons could be treated as ideal gases below 2.0°K, he worked out the kinetics of the excitations and found that four kinetic coefficients were required to describe their behavior besides the ordinary viscosity coefficient. Three of these he called coefficients of second viscosity, and he was able to explain the anomalous first sound absorption with these. The final coefficient was related to the process of heat conductivity, and while it did not appreciably effect the first sound attenuation, he showed that it would be the major factor in second sound attenuation. Khalatnikov's expression for the second sound amplitude attenuation coefficient a_2 expressed in terms of the above mentioned kinetic coefficients is

$$a_2 = \frac{\omega^2}{2\rho v_2^3} \left[\left(\frac{4}{5}\mu + \frac{5}{2}\eta \right) \frac{\rho_s}{\rho_n} \frac{K}{C} \right] \quad (3)$$

where ω is the angular frequency, v_2 is the second sound velocity,

μ is the normal fluid viscosity, f_{11} is a function of the second viscosity coefficients, C is the specific heat of helium II, and K is the heat conductivity coefficient. Khalatnikov derived this expression in 1952 before the existence of any measurements of second sound attenuation in the temperature region in which this equation is valid.

The present investigation was undertaken to measure the dependence of second sound attenuation upon amplitude, frequency, and temperature. A continuous wave method as opposed to a pulse method was employed for the taking of measurements. These measurements consisted of a direct determination of second sound amplitude as a function of distance by varying the distance between a fixed transmitter and a movable receiver. Both transmitter and receiver consisted of thin layers of carbon deposited on a bakelite backing. The receiver formed part of a bolometer circuit in which the semi-conducting temperature dependence of the carbon resistance was utilized to convert the second sound temperature fluctuations into small voltage fluctuations. The radio frequency amplifier unit for the receiver was capable of detecting electrical signals on the order of a few millimicrovolts.

The ratio of transmitter dimensions to second sound wave length in these measurements was always greater than one hundred to one. This resulted in a very narrow beam of second sound and hence very small geometrical attenuation. The fact that there were no walls within a centimeter of this beam precluded the chance of having any wall losses. Thus all observed attenuation was attributed to true second sound absorption and no corrections were applied. The actual exponential decay of the amplitude with distance provided some justification for this procedure.

The frequencies employed were on the order of hundreds of kilocycles per second (more than an order of magnitude larger than had been previously used) and the attenuation was so severe that reflected waves did not appreciably contribute to the observed second sound amplitude, i.e. due to the extreme damping, resonance effects were eliminated.

It was found that the second sound attenuation did not depend on amplitude for the range of amplitudes employed. Some work of Atkins and Hart which appeared in the literature while this material was being written indicates that the attenuation does depend on amplitude. The amplitudes they used, however, were much larger than those in the present investigation and the results are not incompatible.

The frequency squared dependence of the attenuation as predicted by (3) was found to be well satisfied from 100 kc/sec. to 270 kc/sec. Atkins and Hart also indicated that this relation appeared to be approximately valid in the 10 kc/sec. to 30 kc/sec. range which they used.

The observed magnitude and temperature dependence of the attenua-

tion is in excellent agreement with that predicted by (3). The measured values being slightly higher in the upper temperature region near 2.0°K where (3) becomes invalid due to interactions in the roton-phonon gas. At still higher temperatures the attenuation begins to increase rapidly and apparently becomes infinite at the λ -point. Atkins and Hart also found agreement with (3) in the temperature region 1.15°K to 1.6°K though their measurements were complicated by geometrical attenuation due to the low frequencies employed.

Temperature °K	$\alpha/\omega^2 \times 10^{18}$ sec ² /cm	Temperature °K	$\alpha/\omega^2 \times 10^{18}$ sec ² /cm
1.275	14.1	1.80	0.72
1.30	11.2	1.85	0.59
1.35	7.9	1.90	0.51
1.40	5.6	1.95	0.49
1.45	4.25	2.00	0.51
1.50	3.10	2.05	0.66
1.55	2.35	2.10	1.00
1.60	1.82	2.125	1.45
1.65	1.41	2.15	2.51
1.70	1.10	2.16	4.0
1.75	0.89	2.17	8.9

Because of the observed frequency squared dependence of the attenuation, it was possible to obtain a plot of the frequency independent quantity α/ω^2 as a function of temperature. Values of α/ω^2 taken from a smooth curve drawn through the experimental points are presented for reference in the table above.

The results of this experimental investigation tend to strengthen the phonon-roton gas model of helium II put forward by Landau and to justify Khalatnikov's interpretation of how these particles should interact with one another.

TWO DUALISMS IN THE SYNTAX OF NOTKER TEUTONICUS

by JAMES CECIL KING •

INTRODUCTORY REMARKS

The forthcoming concordance to Notker Labeo's works, by Dr. Edward H. Sehrt, emphasizes the need for a complete Notker-syntax. Surely the language of the outstanding prose writer of the Old High German period should now undergo a long overdue treatment of its syntax by way of supplement to the morphological, phonological, and lexical data already available.

Intended as an initial contribution to a complete syntax of Notker Teutonicus, this research consists of the following two divisions: (1) *uuanda*, coordinating and subordinating causal conjunction; and (2) *sin* and *uuesen*, infinitives of the substantive verb *to be*. Far from being peculiar to Notker, the two dualisms obtain for the Old High German period in general.

The exceedingly large number of examples precluded extending the treatment of *uuanda* beyond Marcellianus Capella for the time being in view of the thoroughness required of any complete syntax to Notker Labeo. Representing the stylistic and syntactic high point of Notker's composition, the Old High German version of *De nuptiis Philologiae et Mercurii* was chosen specifically as the *point d'appui* for the first portion of this dissertation.

Briefly, the first section of the following presentation is directed toward describing separate areas of coordination and subordination for *uuanda* through attention to such factors as the position of the clause and its finite verb, the presence of a correlative, the existence of a parallel Latin passage, as well as the reference, structure, and force of the Old High German clause.

The second division of the research is devoted to an attempt to differentiate syntactically between the infinitives *sin* and *uuesen* in Notker Labeo, the first of its kind for Old High German. Fortunately, the occurrences in the complete works, although numerous, did not prove unwieldy, for the advisability of including all the writings in such a project is apparent.

Included in the consideration of *sin* and *uuesen* are the extended gerund forms as well as the compound infinitives, with prefixes. As

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regards the Psalms, fourteen instances of *sin* and nine of *uuesen*, appearing in the interlinear interpolations of a writer other and later than Notker Labeo, are discounted. Despite the emphasis on a syntactic analysis, semantics and other nongrammatical aspects of linguistics receive attention throughout the study of the two infinitives.

Uuanda, Coordinating and Subordinating Causal Conjunction
(Modern German denn and da/weil, respectively)

Efforts to distinguish between coordinating and subordinating *hwanta* (the standard Old High German form) have generally miscarried because of various factors which obscure the situation. For example, in one instance coordinating *hwanta*, in another subordinating *hwanta* renders the same Latin conjunction, whether coordinating or subordinating (e.g., *nam* or *quia*). A decision in favor of one word order type proves far from simple whenever the elements of a clause are restricted to the conjunction, subject, and finite verb. Certain elements may follow the finite verb even in dependent word order. Occasionally, an element in addition to the subject precedes the finite verb in independent word order. In resorting to inverted word order, a writer may overlook subordination. Doubt as to whether the author associated subordination with dependent word order arises at times. Finally, determining the force of a given clause is often subjective and indefinite.

From the standpoint of word order, *uuanda* (Notker's spelling) introduces clauses with the finite verb in second position—i.e., with normal or inverted word order—and clauses with the finite verb in final position or with at least one element between the subject and predicate—i.e., with dependent word order. The phenomenon of inverted word order depends not upon the occurrence of *uuanda* but rather upon the appearance after the conjunction of an element of the clause other than the subject or predicate with the result that first the finite verb and then the subject follows. One construction lacks a finite verb in Notker's translation.

Uuanda may introduce an independent sentence, a clause in initial position, or a clause in final position according to the syntactical relationship involving the construction which the clause supports logically. Whenever the causal clause appears at the beginning of a sentence, a correlative generally introduces the second clause. Less frequently does a correlative accompany that *uuanda* which introduces a causal clause in final position.

The examples of *uuanda* in Notker's Marcellinus Capella are distributed below in accordance with the preceding classification.

<i>uuanda</i> introducing	word order type				total
	principal		no finite		
	normal	inverted	verb	dependent	
independent sentence	44	23		1	68
initial clause; no correlative in second clause	..	..	..	3	3
initial clause; correlative in second clause	3	..	..	19	22
final clause; no correlative in first clause	39	14	1	93	147
final clause; correlative in first clause	4	2	..	14	20
total	90	39	1	130	260

In the light of the foregoing, Notker Labeo's use of *uuanda* in his translation of Marcellianus Capella may be defined as follows:

1. *Uuanda* introduces dependent and principal word order 130 times each. As to the latter, normal word order occurs more than twice as often as inverted word order.

2. *Uuanda*-clauses functioning as independent sentences represent the exclusive area of principal word order, with one exception, the dependent word order of which points to an older, freer usage.

3. Dependent word order predominates by an almost 2:1 ratio after *uuanda* at the head of a final clause not following a correlative in the initial clause. In most instances, the word order type employed is justifiable. Yet, whenever the initial clause is based upon the original Latin text and the *uuanda*-clause is derived from the Latin commentary or an unknown source, principal word order frequently appears to be more appropriate than dependent word order despite Notker's preference for the second.

4. Notker places a *uuanda*-construction before another clause infrequently and yet on several occasions without a Latin parallel. Whenever the second clause permits, a correlative appears at the beginning to facilitate the transition from the *uuanda*-clause. As one would expect, dependent word order prevails in initial *uuanda*-clauses. The *uuanda* of the three clauses with normal word order is a weak introductory particle with practically no meaning.

5. In the minority of instances, a correlative precedes a *uuanda*-clause in final position. A correlative at the beginning of its own clause tends to summarize a preceding thought more than to anticipate the *uuanda*-clause whereas those correlatives which gravitate toward *uuanda*-clauses

definitely anticipate. Dependent word order, occurring in most of the examples, is defensible.

6. In general, that *uuanda*-clause is principal which interprets or expands the clause or element to which it pertains. Whenever a *uuanda*-clause forms a causal basis for another construction, it is dependent in force. Inasmuch as Notker prefers principal word order in the first instance and dependent word order in the second, one may safely state that word order is usually but not invariably a function of the juxtaposition of clauses. The 24 examples of *uuanda* after which dependent word order seems to be out of place are possibly attributable to subordinating *sid*. The 15 apparent exceptions in the case of coordinating *uuanda* point to an earlier date when *uuanda* was prefixed to independent constructions which only later came to be felt as causal clauses. In 5 occurrences, inverted word order obscures a dependent relationship. However, the fact that a classification of clauses on the basis of intended meaning or force involves considerable subjectivity speaks in Notker's behalf.

7. No doubt arises as to whether inverted word order actually occurs in a given instance in view of the requirements of inverted word order. Normal word order need be questioned for the most part only in a few occurrences where no element follows the finite verb. As long as at least one element separates the subject from the predicate in dependent word order, that word order type can be identified. The force and context of the clause shed much light upon borderline occurrences. On 74 out of 130 occasions, the finite verb concludes its clause in dependent word order. Of 56 subordinate clauses with the finite verb removed from final position, 10 contain elements which follow their finite verbs in order to introduce subordinate clauses.

8. Although complex constructions follow subordinating as well as coordinating *uuanda*, 47 *uuanda*-clauses containing principal word order introduce subordinate clauses, compared with 23 *uuanda*-clauses containing dependent word order.

9. A *uuanda*-clause appearing in a sentence with another clause does not necessarily pertain to a principal clause. In 49 out of 129 instances, *uuanda*-clauses with dependent word order refer to elements of clauses or to dependent clauses. *Uuanda*-clauses with principal word order pertain to constructions other than principal clauses in only 16 out of 63 occurrences.

10. The Latin equivalent of *uuanda* is of little significance. To be sure, *uuanda* with principal word order stands for 43 of the 67 Latin coordinating conjunctions. Yet, it renders a Latin subordinating conjunction in 35 instances. Although representing 53 of the 88 Latin subordinating conjunctions, *uuanda* with dependent word order replaces a Latin coordinating conjunction on 24 occasions. Subordinating con-

junctions outnumber coordinating conjunctions in the Latin sources, 88:67. However, in 85 instances the Old High German conjunction lacks a Latin equivalent. Often the Latin original presents a non-causal clause. The Old High German clauses render only 8 of 21 Latin correlatives; most of the Old High German correlatives are without Latin equivalents. Thus, Notker proceeded with regard for the force which he intended for a given clause and not out of regard for the Latin equivalent.

11. The position of the Latin finite verb is even less significant. With dependent word order prevailing in Latin, the Old High German clauses show no differentiation between subordinate and principal word order on the basis of the Latin word order.

12. Notwithstanding the appearance of the Latin subjunctive in clauses of quoted reason and the like, Notker used the indicative in every *uuanda*-clause, with one exception involving a contrary-to-fact conditional sentence.

13. There is no instance of *uuanda* functioning as the conjunction *dass* despite the fact that the Latin commentary furnished several examples of *quia* introducing *that*-clauses. Although Notker wavered between *uuanda* and *daz* after anticipatory *fone diu*, the causal is just as correct as *daz*. Compare Modern German *deshalb . . . weil* and *daher . . . dass*.

14. Further evidence of Notker's independent procedure are the sentences in which he introduced an initial clause not present in the Latin source. On several occasions, he simply prefixed an initial clause plus *uuanda* to an otherwise independent construction, without a Latin equivalent for even the conjunction.

SIN AND UUESEN, COMPETING INFINITIVES OF SUBSTANTIVE VERB TO BE

One of the oldest and most involved verbs, the Germanic verb *to be* derives forms from the three Indo-European roots **bhēg-*, **es-*, and **ues-*. All the Germanic dialects contain *tesan* or a variant spelling as the infinitive. However, *bīon/bēon* competes with the *ues*-root infinitive in Old English. After the analogy of verbs with the infinitive corresponding to the third person plural of the present optative—namely, weak verb classes II and III—the substantive verb eventually received a second infinitive, the *es*-root *sin*, in Old High German.

Several observations should be made in preparation for an examination of the two infinitives in the complete writings of Notker Labeo. The older infinitive, *uuesen* (Notker's spelling) from a period during which it enjoyed exclusive use, is justified wherever it occurs. At the same time, *sin* has almost reached the frequency of *uuesen* and is eventually

to displace the older infinitive. Therefore, wherever *sin* appears, it likewise is acceptable. At this midway point in the development of the two, Notker offers a vantage point from which to determine the constructions in which *sin* has gained a firm footing and those in which *uuesen* has held fast.

Initially, all the occurrences of *sin* and *uuesen* are grouped according to their syntactic function as follows:

construction	frequency		total
	<i>sin</i>	<i>uuesen</i>	
complementary infinitive to			
modal auxiliaries	272	77	349
miscellaneous verbs	9	13	22
subtotal	281	90	371
objective infinitive to			
miscellaneous verbs	29	37	66
accusative with infinitive, governed by			
verbs of saying and demonstrating	30	113	143
verbs of thinking and perceiving	21	89	110
subtotal	51	202	253
nominative with infinitive, governed by			
verbs of saying and demonstrating	..	5	5
subjective infinitive to impersonal			
constructions	9	37	46
substantive			
infinitive, nominative and accusative		11	11
genitive gerund		5	5
dative gerund		3	3
subtotal	..	19	19
dative gerund functioning as verb	4	2	6
total	374	392	766

The following fifteen points incorporate the findings concerning *sin* and *uuesen* throughout the works of Notker Teutonicus:

1. Almost equalling *uuesen* in frequency, *sin*, like *uuesen*, occurs even in the dative gerund. Only *uuesen* has genitive gerund examples, however.
2. In addition to the uses in which *uuesen* has maintained its dominance, there are areas in which the older infinitive may still occur although it has given way for the most part to *sin*. More frequent than

uuesen in certain constructions, *sin* does not appear in others; in a third group, *sin* occupies the minority position.

a.) The commonplace nature of the construction explains the establishment of *sin* as a complementary infinitive to modal auxiliaries. Whereas *uuesen* remains before a modal auxiliary, apparently because of metrical considerations, euphony seems to favor resonant and monosyllabic *sin* at the end of a clause, the more usual position. Both infinitives are acceptable in the interior of a clause. *Sin* and *uuesen* as complementary infinitives to miscellaneous verbs are too infrequent to permit generalization.

b.) In the matter of objective infinitives to miscellaneous verbs, *sin* is preferred after *lāzen*, *uuesen* after *uuelen* and *(ge)tūn*. *Uuesen* occurs with the factitive *(ge)tūn* to the exclusion of *sin*, in a periphrastic formation. Contrary to *uuelen* requiring a complementary infinitive, *uuelen* governing an objective infinitive generally appears with *uuesen*.

c.) With verbs of saying and demonstrating, thinking and perceiving, *uuesen* retained its majority, possibly for two reasons. (1) The relative novelty of the accusative/nominative with infinitive may well have made desirable the use of the older, more familiar infinitive.

(2) In view of the origin of *sin*, ambiguity could have arisen as to whether the infinitive or a finite, optative form was present. The isolated instances of the nominative with infinitive contain only *uuesen*.

d.) *Uuesen* outnumbers *sin* by far as a subjective infinitive to impersonal verbs. A literary device, not a part of popular expression, the subjective infinitive was more readily accepted in the form *uuesen*.

e.) *Sin* offers no competition to *uuesen* functioning as a substantive. The most abstract of all uses, the substantive was unfavorable to the younger infinitive. The phonological identity of the possessive and genitive *sin* with the infinitive *sin* may also have operated against the latter.

f.) *Sin* outnumbers *uuesen* in the limited number of dative gerunds functioning as actual verbs, with the preposition *ze*.

3. An examination of the Old High German governing verbs reveals no preference for *sin* or *uuesen* on the basis of person, number, tense, mode, or negation. That *sin* occurs more frequently than *uuesen* after the imperative is incidental to the fact that *lāzen*, after which *sin* is regular, accounts for most examples of the imperative.

4. As a rule, the choice of an Old High German infinitive or gerund is not related to whether the Latin equivalent is an infinitive or a finite form of *esse* or another verb, whether the corresponding Latin passage

lacks an equivalent, whether the Latin text or commentary serves as the original, or whether the Latin source is unknown. Instead, the choice of *sin* or *uuesen* generally depends upon the Old High German construction containing the infinitive or gerund.

For example, *sin* outnumbers *uuesen*, 5:2, as the German rendition of *feri*. However, four of the five instances of *sin* serve as complementary infinitives to modal auxiliaries, a construction for which *sin* is preferred. One of the two occurrences of *uuesen* corresponds to the finite form *fit*. Both *sin* and *uuesen* render *fuisse* (2:3), *futurum esse* (4:4), and *vivere* (1:1). *Sin* alone corresponds to the infinitive *existere*, on three occasions; *uuesen* represents the gerund *existendi* once. *Uuesen* equals the infinitives *accidisse* and *consistere* once each, *constare* twice, *exstatutum esse* once, *habitare* and the noun *habitatio* once each, *manere* twice and the gerund *manendi* once, *subsistere* once and the gerund *subsistendi* twice. *Uuesen* outnumbers *sin*, 7:1, as the equivalent of *inesse*. *Sin* renders one finite form each of *manere* and *permanere*.

5. *Sin* and *uuesen* alike may express futurity and serve as copulative infinitives with simply the meaning *to be*. Only *sin* occurs as a redundant objective infinitive to *lâzen*, *to desist from*; *sin* is preferred after *lâzen* as *to permit*. *Uuesen* appears exclusively as an inchoative infinitive with the factitive (*ge*)*tûon*. Both *sin* and *uuesen* may render *to exist*, *endure*, and *dwell*, except that *uuesen*, by virtue of its exclusive use as a substantive, surpasses *sin* as *to exist*.

6. *Uuesen* occurs in all seven perfect active infinitives, only one of which is in a construction favorable to *sin*. As an infinitive appearing with past participles which generally function as adjectives—formally, in perfect passive infinitives—*sin* almost matches *uuesen*, in the ratio 28:31.

7. Compound infinitives, with prefixes, display *sin* and/or *uuesen* on the basis of the construction requiring the infinitive rather than of the actual prefix, for the most part. Of the 35 compound infinitives, 20 appear with *sin*, 15 with *uuesen*. Only the prefixes *sament-* and *ana-* have sufficient examples to indicate a preference. *Sament-sin*, outnumbering *sament-uuesen*, 11:3, is equal to *adesse*; *ana-uuesen*, surpassing *ana-sin*, 8:2, corresponds to *inesse*.

8. Only two examples of the negative *nesin* occur, compared with 19 of *neuuesen*. Three instances of *neuuesen* and only one example of *nesin* complement modal auxiliaries despite the preference for *sin*.

9. The position of *sin* and *uuesen* was shown above to be significant in the choice of an infinitive to complement a modal auxiliary. To be sure, the position of the infinitive is of primary concern only in that construction, but *sin* conforms in large measure throughout its occurrences. Monosyllabic and resonant *sin* is preferred after *lâzen*, which frequently appears in the monosyllabic imperative form *lâ(z)*.

Such considerations emphasize the factors of euphony and rhythm, which make desirable for Notker's works a speech curve according to Sievers' procedure.

10. Alliteration and end rhyme are present in passages containing *sin* and *uuesen*. Yet, no more definite a statement is possible than that occasionally the requirements of initial and end rhyme may have influenced the choice of an infinitive. Nor do the infrequent examples of *sin* and *uuesen* in passages corresponding to metrical portions of the Latin original indicate an intent to render verse by verse.

11. Notker has in no instance used *sin* or *uuesen* with the perfective prefix, *ge-*, despite the numerous opportunities which the modal auxiliaries offer.

12. The variant spelling *uuesin*, scribal in origin, occurs 17 times.

13. No preference can be claimed for *sin* or *uuesen* in a given work. for the frequency corresponds to the number and types of constructions in each writing. Notker's use of *sin* and *uuesen* does not vary from work to work.

14. Apparent exceptions to Notker's normal pattern for the use of *sin* and *uuesen* are natural inasmuch as the preferences considered above were, in general, subconscious tendencies instead of explicit rules to which Notker consciously and strictly adhered. Moreover, the cross-currents of analogy and alternation resulted, no doubt, in an indeterminate number of deviations.

15. In the writings of Notker Labeo, *sin* practically achieved numerical equality with *uuesen*, remaining slightly inferior syntactically.

THE PHYSIOLOGICAL FATE OF RADIO-PHOSPHORUS LABELLED TRANSFUSED LEUCOCYTES

by WILLIAM VINCENT CRAHAN LEAHY •

INTRODUCTION

Under normal conditions, in spite of the fact that large numbers of lymphocytes are continuously entering the blood via the thoracic duct, the number of circulating lymphocytes in the blood remains approximately constant. Yoffey (1953) in a series of experiments on dogs showed that the daily input of lymphocytes to the circulation along this avenue is about 5.2 billion cells. This is about two and a half times the total number circulating. Other workers (Bunting and Huston, 1921) (Sanders, 1940) have determined the number delivered via this route and found it to be as high as five times the number circulating. Since the lymphocyte count of the blood remains relatively unchanged, this evidence means that lymphocytes equal in number to those delivered, leave the circulation during a twenty-four hour span. In other words, a dynamic equilibrium exists.

Danielian and Isaacs (1927) showed that leucocytes are lost in saliva and via the intestinal tract. Large numbers of leucocytes, especially lymphocytes, pass through the epithelium of the gut into its lumen. It is felt by some workers (George, 1941) that this is a response by cells to nutrient materials. A similar phenomenon has a great deal of functional significance in lower invertebrates such as sponges and oysters in which digestion takes place largely intracellularly in the leucocytes. In the vertebrates, in which digestion takes place largely extracellularly in the lumen of the gut, it may be a persisting reaction without any great physiological usefulness. That this avenue is not essential to the maintenance of the lymphocytic equilibrium was demonstrated by Erf (1940) who showed that intravenously injected lymphocytes were rapidly removed from the circulation of animals whose entire gastro-intestinal tract had been removed. A possible hormonal component was indicated by the work of Ehrlich (1940) who studied the effect of the adrenal cortical hormones from this standpoint. These hormones are thought to cause the lysis of lymphocytes in the germinal centers of lymph nodes. Andrews (1910) and Webb (1924) while investigating the leukopenia associated with anaphylactic shock, noticed the adherence of white blood cells to the walls of the pulmonary capillaries. More recently, Lanman *et al* (1950) showed that transfused leukemic cells

• A.B. 1944. University of Pennsylvania; A.M. 1950. The George Washington University; Ph.D. conferred June 9, 1954. Professors in charge of research: Paul Kenneth Smith, Professor of Pharmacology; Chester Elwood Leese, Professor of Physiology.

rapidly disappear from the circulation. In experiments in which he transfused blood containing up to 143 billion cells, there was a transient rise in the recipient's leucocyte count followed by removal in the pulmonary circulation.

Farr (1946), using rabbits, transfused blood the leucocytes of which were vitally labelled with acriflavine, and noted that a small number of the cells remained in the circulation for 60 to 72 hours. The great majority disappeared and did not return. Weisberger *et al* (1949) carried out experiments of the same nature using leucocytes labelled with P^{32} . They noted that the transfused cells were rapidly removed in the pulmonary circulation. In a series of later experiments (Weisberger *et al*, 1951) they used lymphocytes obtained from the thoracic duct and also tagged with P^{32} . Upon transfusion the same pulmonary sequestration resulted. Julliard (1952) carried out this study on humans with cells tagged with P^{32} . Their results paralleled those already obtained from animal studies.

At the present time, mechanisms involved in the failure to raise the white blood cell count by transfusion remain unknown. Also unknown are the mechanisms which operate to maintain the dynamic equilibrium of the circulating leucocytes. Previous studies cited here point out the interesting role played by the pulmonary capillaries in removing transfused leucocytes from the circulation. This mechanism is emphasized in transfusion due to the sudden injection of great numbers of leucocytes into the circulation. Whether or not this is an undue emphasis of an already existing, physiological mechanism for equilibrium maintenance or a new response to the transfusion *per se* is a question still unanswered.

Previous studies on the transfusion of leucocytes, have not been concerned with the fate of the cells beyond their sequestration in the lesser, or pulmonary, circulation.

The present study was developed and designed in order to: (1) show the initial distribution in the recipient of the radioactivity contained in transfused white blood cells; (2) determine whether or not this initial pattern of activity undergoes change and, if so, which organs participate and to what extent; (3) determine whether or not a change in the site of activity is accompanied by a breakdown of the transfused white blood cells; and (4) determine the extent of the changes in the cell components by the identification of the chemical nature of the "gained" or "shifted" activity.

These studies are essential as a background for a solution of the broader problem of successful leucocyte transfusion.

METHODS

Radioactive Leucocytes.—Leucocytes labelled with radioactive phosphorus were obtained by injecting a rabbit with approximately one mil-

licurie of P^{32} as phosphate in weak hydrochloric acid intravenously prior to stimulating the production of leucocytes in the rabbit's peritoneum. Two to seven days after injecting the radioactive phosphorus, leucocytes were obtained from the rabbit's peritoneal cavity by a modification of the method of Mudd and co-workers (1929).

Surgical Techniques.—Direct ventricular injections and withdrawals for sampling purposes were carried out by placing the animals under continuous artificial respiration, using a small animal respirator. Once stabilized, the chest of the animal was opened and the pericardium incised. The flaps were then secured to the chest wall to form a cradle for the heart.

Preparation of Samples for Counting.—When whole blood was to be analyzed for activity, it was drawn out using a silicone-treated tuberculin syringe and measured in the syringe. It was then carefully delivered to a cupped stainless steel plancher and spread evenly by means of a revolving disc. This sample was slowly dried using an infra-red source. It was then stored in a desiccator until counted.

Tissues analyzed for total activity instead of fractional activity were obtained after the organ had been removed and its total wet weight determined. A weighed sample of tissue was then taken and placed in a porcelain dish of the type used in milk analysis. The tissue was dried overnight in an oven at a temperature of 98° to 100°C , and then ashed in a muffle furnace for a period of four hours at a temperature of 600°C . Homogenization of the tissue samples was done on alternate runs.

Phosphorus Fractions Methods.—Tissues were analyzed for activity after fractionation into inorganic phosphorus, organic acid soluble phosphorus, lipid soluble phosphorus, DNA and PNA phosphorus, and phosphoprotein phosphorus. DNA and PNA phosphorus was isolated using Schneider's modification of the Schmidt-Thannhouser technique.

Autohistoradiography.—In the preparation of detail radioautographs, the Eastman Kodak autoradiographic permeable base safety stripping film was used. Under prescribed safe-light conditions, strips of emulsion about one inch square were cut and floated over the specimen which had been previously immersed with a small amount of distilled water. The emulsion with its cellulose backing had been stripped from the plastic backing. The side that formerly adhered to the plastic support was fixed upwards. After allowing the emulsion to become sufficiently stretched over the specimen, the interposing water was removed using strips of filter paper. Withdrawing the water resulted in the emulsion becoming an integral part of the slide. After drying, the slide was placed in a light-tight box and stored in the refrigerator for the proper time of exposure. This technique greatly simplifies the microscopic localization of the radioactive areas, as the image and the tissue are al-

ways in point-to-point correlation and each is brought into view by proper focusing. After the proper duration of exposure the slides were developed, fixed, and washed. Upon the completion of the washing of the survey radioautograph, the tissue was stained with hematoxylin and eosin and mounted. After developing the stripping film, the histological section was stained directly through the emulsion by routine methods.

RESULTS

In animals sacrificed three to four minutes following the transfusion of radioactive leucocytes, the greatest amount of radioactivity was found in the lungs. This finding was correlated with histological specimens which gave a picture of leucocytic congestion of the intra-alveolar septae.

The leucocytosis in the recipient animals following the transfusion of heavy suspensions of leucocytes has been shown to be due to cells other than those which were injected.

The extent to which the pulmonary capillary bed removes transfused leucocytes from the circulating blood was investigated. This was done by determination of total activity of serial samples of post-pulmonary whole blood. Results obtained indicate the lung to be highly efficient in this function. The level of activity in the samples analyzed was at insignificant levels after an interval of ten minutes.

It was found that the initially high level of activity in the lungs after transfusion decreased gradually from three minutes or less on. This decrease in the level of pulmonary activity was accompanied by a rising level of activity in the liver. Five hours following transfusion, the level of activity in the liver exceeded that of the lungs. Studies of activity levels in tissues were made both by ashing tissue samples and by direct measurement of surface activity utilizing end-window type probes.

White blood cells used for transfusion studies were fractionated into the four broad groups of biologically active phosphorus compounds: the phospholipid, nucleoprotein, acid-soluble inorganic, and acid-soluble organic fractions. The degree of shifting of radioactive phosphorus from one fraction to another at three and four hours was determined on an *in vitro* basis. It was found that the degree of change never exceeded 10 per cent in any one fraction.

Based largely on the *in vitro* studies previously carried out, the hypothesis that wide differences in the pattern of distribution of radioactivity in the various fractions between the leucocytes introduced and the tissues analyzed connotes cell destruction was advanced and tested. Following pulmonary sequestration, almost immediate onset of cellular breakdown is indicated by the results of this study.

A comparison of the activities of the nucleic acids, pentose nucleic acid and desoxypentose nucleic acid, contained in the white cells injected and in the spleen 24 hours after transfusion was carried out. Three out of four animals showed no radioactivity in the pentose nucleic acid of their spleens and one showed slight activity. All four animals showed fairly high levels of activity in the desoxypentose nucleic acid fraction.

CONCLUSIONS

1. After transfusion of heavy suspensions of leucocytes, there occurs almost immediate sequestration in the pulmonary circulation.
2. Almost immediately after pulmonary sequestration, the transfused leucocyte undergoes a process of disintegration.
3. The partially disintegrated cells in the pulmonary circulation are gradually released to the liver.
4. The nuclear moiety of the transfused leucocytes resists breakdown through the pulmonary and hepatic phases of the post-transfusion course of these cells.
5. The spleen exhibits marked ability to collect the disintegrating cells after they pass through the liver.
6. The spleen is the site of the breakdown of the nuclear moiety of the transfused leucocyte.

SOME ASPECTS OF THE COSTS OF THE FEDERAL ELECTRIC POWER PROGRAM, 1930 TO 1952

by JOHN WILLIAM SKINNER *

THE PROBLEM

In the controversy over the relative advantages of public, as opposed to private, ownership in the electric power industry, little has been presented which is not colored by the nature of the special interests of the participants. There is, in fact, at present, no objective basis for closely comparing public, particularly federal, with private production of electric energy. The two sectors of the industry are not directly comparable because of differences in the nature and purposes of public, as opposed to private, production facilities. The nature and purposes of public and private projects cause differences in the physical facilities and, hence, in benefits and in investment and production costs.

A method of contributing to a resolution of the controversy between public and private electric power would be to measure their relative contribution to the nation's economic welfare. Measurement of welfare, however, is not now possible, since data presently available are quite inadequate. It is thought that progress can be made toward ultimate solution of the controversy by examining some aspects of the costs of the federal electric power program, and by suggesting possible approaches to measurement of the cost to the United States Treasury and thus to the federal taxpayer. Toward these ends this dissertation is directed.

THE SETTING OF THE PROBLEM

The electric power industry by 1950 had attained a generating capacity at about 69 million kilowatts. The Federal Government, through its power agencies, the Tennessee Valley Authority; the Bureau of Reclamation; and the Bonneville, Southwestern, and Southeastern Power administrations, owned and operated projects with a capacity of about 10 million kilowatts, and had under construction planned projects which would bring the total federal generating capacity to about 21 million kilowatts.

The Federal Government today plays varying roles in the industry. It is the producer and seller of electric energy, a partner in supplying assistance to non-federal public power agencies, and a regulator of the

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whole industry. Attention here is limited to the Federal Government's role as a producer and seller of power.

The Federal Government entered the field of electric power production and transmission after 1900 through five different avenues: its activities in providing irrigation services, the requirements of national defense, the improvement of inland navigation, flood control activities, and the provision of public employment during periods of depression. Before 1930 federal power production was very limited, but the groundwork for federal participation was established. Following 1930 a very rapid expansion of federal activity in the field took place because of the construction of Hoover Dam, the establishment of the Tennessee Valley Authority, the construction of Grand Coulee and Bonneville dams, and the establishment of the Central Valley Project. During World War II some planned activity was postponed, but following the war new construction was rapidly carried out.

THE NATURE OF FEDERAL PROJECTS

Most projects capable of producing electric energy which are owned and operated by federal agencies are multiple-purpose projects, *i.e.*, projects designed to produce hydroelectric energy in conjunction with the provision of irrigation, flood control, navigation, and other services. A few single-purpose steam and hydroelectric plants are owned by the Tennessee Valley Authority. The private sector of the industry, on the other hand, produces power exclusively from single-purpose plants of varying types. This basic difference in the nature and purpose of production facilities makes direct comparison of federal and private power costs extremely difficult.

The use of multiple-purpose projects for the production of electric energy makes possible the realization of economies of joint investment, and in some instances may provide benefits subsidiary to power production which would not otherwise have been considered to be economically feasible. The use of water-control projects for multiple purposes does create problems of operation owing to the conflicting requirements of the various services, but such problems seem to be capable of solution in most instances.

FINANCING FEDERAL POWER PROJECTS

Federal multiple-purpose projects used in the production of hydroelectric energy require extensive facilities, and the construction of these facilities requires the provision of large sums of money. Two methods of external financing have been available to the power agencies: appropriations from Congress and loans from the Treasury. Appropriations

from Congress have provided the larger part of funds, but instances do exist in which agencies have borrowed from the Treasury. Some federal construction has been financed directly by the power agency out of earnings, but this procedure is not now permissible. No matter what the source of funds for construction, current policy requires that the agency repay the investment charged to power within certain periods of time and with interest up to 3 per cent, except for the power investment of the Tennessee Valley Authority which now carries no interest charge.

FEDERAL POWER COSTS

Principally because power investment must be repaid to the Treasury, it is necessary to determine the cost of power generation to the power agencies. The fundamental problem in determining this cost is to allocate an appropriate share of total cost of multiple-purpose projects to each of the services performed. Current procedure calls for each service to be charged directly with the total cost of single-use facilities at multiple-purpose projects, *i.e.*, generators, turbines, etc., and to share the cost of multiple-use facilities, dams and waterways. Many methods for allocating costs of the multiple-use facilities have been proposed and are in use. Each ultimately requires that the allocation be made on the basis of judgment. As a result, power cost allocations are the subject of continuing controversy.

Because federal electric energy is generated by multiple-purpose projects in most cases, the unit cost of power generation is less than that in the private sector of the industry. In addition, federal power costs are lower since: lower rates of interest are carried; some administrative and general expenses are not allocated to power; taxes are not paid, except for some low payments in lieu of taxes made by some agencies; and the federal agency receives many services without charge for which the private company must pay.

FEDERAL POWER RATES AND REPAYMENT

Federal power rates, like private rates, are based on costs of production. The rates charged for federally produced power are designed to cover costs of production chargeable to power, to repay the amount of investment in facilities allocated to power, and, in some cases, to cover part of the investment in irrigation and other facilities. Current policy requires that federal rates be set at low levels to encourage the widest possible use of power, and they may be set at low levels since costs of production of federal agencies are, for reasons listed above, generally below those of private production. There are indications that rates established for some federal projects may be too low to repay power

investment within the established time limit. Returns from other projects are well ahead of schedule. As further expansion of federal activity takes place, less favorable sites will come under development and costs will tend to rise. At the same time the problem of market development may make it imperative that rates continue to be low. It is likely then that it will become increasingly more difficult for federal agencies to return power investment costs to the Treasury.

THE TREASURY AND THE FEDERAL POWER PROGRAM

The federal electric power program as presently established is designed to be self-financing. Expenditures for the program have been made from money provided by the United States Treasury. Repayments of power investment are made to the Treasury. The Treasury then provides a convenient point at which to measure the results of the program and, inasmuch as federal funds are provided ultimately by taxpayers, measurement of the results of the program at the Treasury is equivalent to the measurement of the burden or gain of the "taxpayer", both present and future.

Treasury Expenditures for the Power Program.—The existence of the federal electric power program has given rise to large expenditures by the Treasury to date, and if plans now current are carried out, will lead to even greater expenditures. The problem of estimating the size of expenditures which have been the result solely of the power program is a difficult one, since that program is merely one phase of the over-all program of water-resource development and is also related to the stabilization of employment and to national defense. The only useful measure of total expenditures for the power program itself, now available, is the total of investment costs allocated to power by the federal power agencies. This estimate of expenditures is about \$1,800 million as of 1952. This sum represents the money outlay of the Treasury in behalf of the program, a sum which could have been devoted to other federal uses. In addition, since the power program was undertaken for the most part during periods when the Treasury showed an excess of expenditures over tax receipts, it represents to a partial degree a sum which the Treasury had to borrow, and consequently must repay with interest.

Treasury Losses from the Power Program.—In addition to Treasury expenditures in behalf of the power program, certain losses to the Treasury have resulted from the program. These losses are made up of the revenue foregone by the Treasury because of the existence of the program, and the additional costs to the Treasury which have developed from the program. The losses resulting from revenue foregone arise from losses of tax revenues which would have been paid, if the electric energy produced by federal agencies were instead produced by private

tax-paying utility companies. Tax losses are estimated at about \$430 million for the period from 1930 to 1952.

Other losses stem from the fact that during most of the existence of the power program federal expenditures exceeded federal tax revenues, and Treasury borrowing was necessary. Borrowing on the part of the Treasury requires the payment of interest on borrowed funds. Because of the existence of the federal electric power program, some additional borrowing on the part of the Treasury was made necessary and it is appropriate to charge interest cost on borrowed funds to the power program. Two basic possibilities exist in computing the interest cost of the program. First, because the power program accounted for only a part of total federal expenditures, it can be charged with only a pro-rated share of interest cost. On this basis, the interest cost of the program from 1930 to 1952 amounted to an estimated \$143 million. Second, since the electric power program is quasi-commercial in character and designed to repay its costs, it may be appropriate to assume that all funds for the program are the result of borrowing. The adoption of this assumption raises the estimate of interest cost to about \$428 million. It is believed that the latter figure represents the truer estimate of the interest cost of the program to the Treasury and the "taxpayer".

Additional losses accrue to the Treasury from the program, as well, in the form of additional expenses to other government agencies, which arise because of their activities in connection with the program. These costs, however, are not large and no estimate is made of them.

The burden of the program on the Treasury consisting of expenditures and losses is estimated at about \$2,658 million, \$1,800 million in the form of expenditures, \$430 million in the form of tax losses, and \$428 million in the form of interest cost.

Treasury Gains from the Power Program.—Expenditures of the Federal Government in behalf of the power program have resulted in the ownership of assets by the Government in quasi-commercial enterprises. Ownership of these assets has created an opportunity for gain by the Treasury and the "taxpayer". The first gain of the Treasury lies with the assets themselves. As of 1952 the assets of the three major power systems of the Federal Government, the Tennessee Valley Authority, the Bureau of Reclamation, and the Bonneville Power Administration, had a declared value of \$2,082 million after depreciation. In addition, power assets whose values had not been computed were owned at projects within the Southeastern and Southwestern Power administrations. Additional facilities were under construction.

The electric power assets of the Federal Government represents a gain to the Treasury and the "taxpayer" since they yield a saleable product and bring in a money revenue to the Government. They also repre-

sent items which might be sold by the Government to private enterprise at a figure not far removed from their stated net value.

The power assets of the Government are designed to repay their investment costs with interest in most cases, and also to repay part of the investment in irrigation in some cases. If they repay more than Treasury expenditures for the program a net gain can be the result.

Other important indirect, but not calculable, gains result from the federal electric power program. The program contributes to the overall development of the economy, promotes higher levels of income by stimulating productivity, and thereby can lead to higher tax returns to the Treasury under the same tax rates. Further gains result if the program contributes to greater stability of levels of income and employment and provides lower costs for national defense.

THE EFFECT OF THE POWER PROGRAM ON THE TREASURY

The effect of the federal electric power program may be assessed by balancing the expenditures for the program and losses arising from the program against the gains which accrue from the program. This problem may be approached on at least four different levels. (1) by merely weighing the Treasury's cash outlays against the Treasury's direct cash returns. This approach will lead to what may be termed the "Cash Effect" of the program. (2) A broader approach may be taken which considers not only cash outlays and direct cash returns, but also Treasury losses and indirect Treasury gains. This approach will lead to what may be termed the "Fiscal Effect". (3) A still broader approach may be taken which would require determination of the increase or decrease in economic welfare arising from the program. This approach will lead to what may be termed the "Economic Effect". (4) Social gain and social losses may be weighed to determine the "Social Effect" of the program. Each effect of the program may be positive or negative, producing either a net gain or a net loss.

The Cash Effect.—The federal power program is planned to return the cash outlays of the Treasury in behalf of the program. Examination of repayments to date and expected future repayments indicates that the program as a whole should impose no net cash burden on the Treasury and on the "taxpayer", even though some projects may not meet their schedules. It is likely that the program in terms of the cash effect, the narrow view, will yield a net cash gain as the program pays part of irrigation costs. In the long run surpluses should be the result.

The Fiscal Effect.—In assessing the fiscal effect, account must be taken not only of cash outlays and cash returns but also of losses of tax revenues, interest costs, and indirect Treasury gains. An assessment is difficult to make since the indirect gains are not capable of

measurement at this time. When the broader fiscal effect is examined, it is by no means certain that no net loss will accrue to the Treasury since additional costs of the program in the form of tax losses and interest costs are high. Additional gains, however, do result in this broader view. While quantitative determination is not possible, it seems likely that on the basis of the fiscal effect some net gain is probable.

The Economic Effect.—The economic effect of the program requires examination of possible gains and losses which cannot be measured at the Treasury. This effect includes within it the fiscal effect of the program on the Treasury and certain frictions, misallocations, and malallocations which must be included on the loss side, and certain nation-wide gains on the gain side. Quantitative measurement of many of the items is not possible, but in the writer's opinion some positive economic gain will result from the program. Certain adjustments of policy could enhance this gain.

The Social Effect.—The assessment of the social effect of the program requires, in addition to the economic effect, the examination of "social costs" and "social losses". The social costs of the program stem primarily from the expansion of governmental activity and cannot be measured. The social gains from the program also are not capable of measurement but accrue basically from the development of so-called "backward areas" of the nation. In the opinion of the writer, some net social gain is likely from the program, but the net gain may be small as the social costs of the program are high.

RECOMMENDED POLICY ADJUSTMENTS

Examination of the various effects of the federal electric power program indicates that the following adjustments of policy could serve to increase the net gains resulting from the program: (1) the construction by the Federal Government of only multiple-purpose projects for the production of electric energy; (2) the coordination of the federal electric power program with the private sector of the industry; (3) addition of interest charges to the agencies on all funds advanced by the Treasury for power investment, and the inclusion of this interest in the cost used for rate computation; and (4) granting of permission to power agencies to reinvest their power earnings.

If the public-private power controversy is to move closer to final solution, new ideas and approaches must be forthcoming. This paper has been concerned with the presentation of one possible method of weighing data that will perhaps assist in the task.

AN EMPIRICAL STUDY OF CERTAIN PSYCHOTHERAPEUTIC OPERATIONS

An exploration of the verbal response techniques of psychiatrists,
psychologists, and psychiatric social workers

by HANS HERMANN STRUPP*

Since the advent of psychoanalysis as a theory and a technique for the treatment of emotional disorders, much has been written, systematically and impressionistically, on the topic of techniques in psychotherapy. Very few objective studies, however, have been conducted of the process of psychotherapy, and even fewer on problems of technique. The reason for this paucity of research is not a lack of recognition of the crucial need of such studies, but is rather a function of the overwhelming difficulties in arriving at adequate conceptualizations. While a few attempts have been made to design objective research around relatively discrete segments of the psychotherapeutic process, very little attention has been devoted to the scientific study of the verbal operations of the psychotherapist. The present investigation, as an exploratory survey of the therapist's verbal behavior, attempts to relate the techniques adopted in various kinds of therapeutic situations to relevant variables of the psychotherapist's training and experience. The larger objective is to make a contribution to the scientific study of psychotherapeutic operations.

In order to elicit the psychotherapist's verbal response behavior under reasonably standardized conditions, an experimental model consisting of 27 relatively short patient communications was constructed. A minimum of background information was provided on the patients represented in the experimental series, but it was stipulated that the patient communications pertained to the early stages of psychotherapy. The statements were considered to be fairly representative as a cross-section of verbalizations encountered in early psychotherapeutic interviews.

This experimental series was administered to a sample of 50 psychotherapists in the Washington, D. C., area (25 psychiatrists, of whom 15 were highly experienced analysts and 10 relatively less experienced therapists; 15 psychologists; and 10 psychiatric social workers). The respondents were interviewed individually, and requested to state what response, if any, they would make to the hypothetical patient, together with their reasons and hypotheses. Information concerning the therapist's background, experience, and training was obtained in each instance.

The therapists' response (almost 2,000 scorable units) were categor-

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ized by means of Bales' system of interaction process analysis. Rater agreement was tested on a 20 per cent stratified sample, and found to be 78 per cent. The most salient results may be summarized as follows:

1. The verbal response techniques of psychiatrists, psychologists, and psychiatric social workers disclose a remarkable degree of similarity. Differences attributable to professional affiliation *per se* include the following:

a. Psychiatrists tend to use a larger number of interpretive responses than other therapists.

b. Psychiatric social workers show a preference for the technique of reassurance.

c. Psychiatrists use passive rejection and aggression more frequently than do psychologists and psychiatric social workers combined.

These differences appear to be a function of divergences in therapeutic objectives in that the therapeutic efforts of psychiatrists may be characterized as most "intensive", and those of psychiatric social workers as least "intensive". Psychologists occupy an intermediate position on this hypothetical continuum.

2. Irrespective of any group with whom they are compared, Rogerian psychotherapists (psychologists) reveal the most unique response pattern. As might be expected, adherents of Rogers' system show a strong predilection for "reflective" responses (analogous to the non-Rogerians' preference for explorations), but there is evidence that highly experienced Rogerians rely less exclusively upon this kind of response and employ other varieties. Non-Rogerian psychologists and psychiatric social workers resemble psychiatrists closely in their response distributions. It appears that an increase in professional experience leads to a diversification of therapeutic techniques, both in the case of Rogerians and non-Rogerians. Adherence or non-adherence to Rogers' system constituted the sharpest cleavage in verbal techniques observed in this study.

3. Apart from the differences between experienced and inexperienced Rogerians, few discrepancies exist between the responses of experienced and inexperienced therapists regardless of professional affiliation which cannot be explained more adequately on other grounds.

4. Psychotherapists whose training included personal analysis (72 per cent) displayed greater activity than those whose training did not. The latter group responds significantly more with passive acceptance and silence. In addition, analyzed therapists show a small but statistically significant preference for passive rejection and aggression, but this may be a distinguishing feature of psychiatrists.

5. In response to suicide threats, all psychotherapists tend to give more reassuring replies. This empirical finding contravenes the recom-

mendations made by leading therapists in the literature. Suicide threats also seem to evoke definitions of the therapeutic situation (structuring) from the therapist.

6. In accordance with predictions, all therapists, when responding to transference reactions, engage in a greater number of interpretations.

7. A series of complaint statements made by a seriously disturbed near-psychotic patient evoked greater activity from psychotherapists than other communications. This trend was more pronounced for therapists whose training had included personal analysis. These results are in agreement with recommendations applicable to the therapist's behavior in dealing with such individuals.

It is concluded that, within the limits imposed by the experimental model, the conceptual framework here employed makes it possible to describe relevant aspects of psychotherapists' verbal techniques along meaningful heuristic dimensions. Despite the fact that Rogerian psychotherapists display a unique response pattern, the similarities between psychotherapists following other theoretical orientations (mostly variations of Neo-Freudianism) are more impressive than the differences. These results provide preliminary evidence for the growing movement toward eclecticism in psychotherapeutic technique—one of the important American developments in this area during the last few decades. The present experimental approach, which can readily be extended to the study of larger segments of the therapeutic process, offers considerable promise for the systematic study of psychotherapeutic operations.

This investigation has been guided by this working assumption: to the extent that psychotherapy aspires to scientific status, it must be based upon rational procedures capable of precise formulation and communication. A corollary of this proposition is that psychotherapeutic operations are not teachable unless the requirement of communicability is met. Today this need is increasingly recognized by psychotherapists and researchers alike. The present inquiry is obviously only a beginning, and its results are far from definitive. However, it has led to the postulation of a number of potentially fruitful hypotheses, and permitted the testing of several others in a preliminary way. As such, this work is part of the contemporary effort to elucidate the process of psychotherapy and to provide it with a rational and objective foundation.

THE EFFECTS OF SARCOMA-37 AND X-IRRADIATION ON THE INCORPORATION OF ADENINE-8-C¹⁴ INTO NUCLEIC ACIDS

by JAMES LEONG WAY*

As a result of previous studies by Meischer (1871) on nucleic acids and cell nuclei, the biological significance of Kossel's (1885a), (1885b) isolation of adenine from beef pancreas immediately associated the compound with cell nucleus, chromatin, and nucleoprotein.

Since nucleic acids have frequently been linked with chromosomes, heredity, and growth processes, it was felt that isotopically labeled adenine offered a valuable tool to study the metabolism of nucleic acids under different experimental conditions.

Highly cellular rapidly proliferating tissues like various neoplasms are known to be rich in nucleic acids, especially DNA (desoxypentose nucleic acid). DNA synthesis has been associated with cellular mitosis. One of the present approaches to the control of neoplasia is by the inhibition of nucleic acid synthesis.

It is well established that X-irradiation can cause various chromosomal aberrations, and DNA, which is believed to be an integral component of nuclear material, has been shown to be very susceptible to ionizing radiation. X-irradiation is known to alter the physico-chemical properties of the DNA molecule as well as to affect the biological metabolism of nucleic acids. In view of these previous observations, it seemed worthy of further investigation to study the effects of tumor growth and X-irradiation both independently and interdependently on the metabolism of nucleic acids by the application of an isotopically labeled precursor of nucleic acids.

The purpose of these investigations has been to synthesize adenine-8-C¹⁴ and to apply it as a tracer in a study of the biosynthesis of nucleic acids in normal and neoplastic tissues and the influence of X-irradiation on the biosynthesis of nucleic acids.

Traube's synthesis of adenine was adopted for the introduction of the radioactive label into the purine ring. The initial step of this synthesis involved the condensation of thiourea and malononitrile to give 2-thio-4,6-diaminopyrimidine. Treatment of 2-thio-4,6-diaminopyrimidine with nitrous acid yielded the 2-thio-4,6-diamino-5-nitrosopyrimidine which subsequently was reduced to 2-thio-4,5,6-triaminopyrimidine. The thio group was oxidized in cold alkaline solution with hydrogen peroxide to the 2-sulfinic-4,5,6-triaminopyrimidine. The sulfinic acid group then was

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decomposed to sulfur dioxide in boiling dilute sulfuric acid, forming 4,5,6-triaminopyrimidine.

Clark and Kalckar described the method which was followed with minor modifications for the conversion of 4,5,6-triaminopyrimidine to adenine. This synthesis involved the interaction of 4,5,6-triaminopyrimidine with C^{14} -formic acid to produce 4,6-diamino-5-formamidopyrimidine. It was observed that the addition of 1.3 instead of 1.0 milliequivalents of HCl per millimole of sodium formate and 4,5,6-triaminopyrimidine gave not only the highest yield, but also the greatest purity of the formamido derivative, as determined by differential spectrophotometry. This minor modification was found to influence the conversion greatly and produced the crystalline formamido derivative in a yield 20 per cent higher than those reported in the literature. The formamido derivative was then converted to adenine by closure of the imidazole ring with diethanolamine at 210°C under a nitrogen atmosphere. Adenine was isolated by precipitation as the silver salt at pH 1, redissolved in hot 1 *N* HCl, and further purified by subjecting it to chromatography on Dowex 50 cation exchange resin. The yield of the final product was 524 mg. of adenine hydrochloride hemihydrate or 62 per cent based on C^{14} formate. The specific activity was approximately 0.5 $\mu\text{c.}$ per milligram of adenine hydrochloride hemihydrate.

The ultraviolet absorption spectral curve and extinction coefficient for adenine-8- C^{14} were determined in a model DU Beckman spectrophotometer and were found to agree with the spectral data compiled in the literature. The radioactive adenine was cochromatographed on Whatman No. 1 paper along with adenine obtained from Schwarz Laboratory Inc. The two solvent systems used were (1) *n*-butanol saturated with 3 per cent NH_4OH , and (2) tertiary butanol, 6 *N* HCl water mixture. Radioassay of the chromatogram indicated only one radioactive peak. The R_f value of the radioactive spot corresponded with the R_f value obtained with adenine obtained from Schwarz. The radioactive chromatogram was eluted with 1 *N* HCl and the location of the maximal spectral absorption at 260 μ corresponded with the location of maximal radioactivity. Optical density ratios of the eluate from the radioactive spot at various wave lengths corresponded to those of adenine.

Normal CAF₁ mice and CAF₁ mice transplanted with sarcoma-37 were used throughout the major portion of this investigation. Sherman strain rats were used for the preliminary incorporation and X-irradiation studies. The adenine-8- C^{14} was administered by intraperitoneal injections.

For the isolation, purification, and degradation of nucleic acids, the method of Bendich and Brown was followed with some modifications. Tissues frozen in a dry ice-ethanol mixture were homogenized in a Waring Blendor, and the mixed nucleates were extracted with hot ten

per cent NaCl. To separate DNA from PNA (pentose nucleic acid), the mixed nucleates were dissolved in 1 *N* NaOH, and DNA was precipitated by the addition of 10 per cent TCA and 6 *N* HCl. The PNA was precipitated as the barium mononucleotide by the addition of barium hydroxide to the filtrate. The DNA and PNA were hydrolyzed to the free purines with boiling 1 *N* HCl. The purines were separated and purified by ion exchange chromatography on Dowex 50 resin. Direct plating of the purines on glass disks was carried out at the infinite thinness level, and the radio-assay was carried out in a gas-flow proportional counter.

In order to test the possibility whether a small amount of the highly labeled adenine-8-C¹⁴ starting material might have contaminated the adenine fractions isolated from nucleic acids, BaPNA was isolated as the separate mononucleotides. The adenylic acid was subsequently hydrolyzed to adenine. The specific activity of the adenine derived from the adenylic acid was identical with that found in the adenine fraction after direct hydrolysis to the purine bases. In order to test the DNA fraction for contamination a known amount of adenine-8-C¹⁴ was added to the mixed nucleates and the DNA was isolated by the usual procedure. It was found that none of the radioactivity or the starting material contaminated the DNA purine fraction. It was concluded therefore that the purines isolated from nucleic acids represented absorbed adenine and were not due to any adherence or adsorption of the highly active adenine-8-C¹⁴ which was injected.

Adenine-8-C¹⁴ incorporation into the livers of normal mice showed a preferential incorporation into the liver PNA with a PNA:DNA ratio of about 24-27. The adenine:guanine ratios of PNA and DNA in all tissues analyzed showed a value of greater than one. The higher molar radioactivity of the adenine fraction compared to the corresponding guanine fraction would agree with the postulation of G. B. Brown that in nucleic acids adenine is a precursor to guanine.

The incorporation of adenine into the tumor nucleic acids in contrast to normal liver, showed approximately the same relative extent of incorporation into tumor DNA and PNA. This indicated that extensive mitosis was occurring in the rapidly growing highly cellular sarcoma-37, producing a greater need for DNA synthesis.

In comparing the incorporation of adenine into liver nucleic purines in tumor-bearing mice and normal control mice, it was found that there was a higher incorporation into the liver nucleic acid purines in tumor-bearing mice. The increased incorporation was most marked in the DNA purines. There are various mechanisms which could explain this finding. Sarcoma-37 might stimulate a more rapid turnover of the liver nucleic acids, or there might be an interchange between the DNA purines of the sarcoma and the liver DNA nucleic acid purines might take place, or

there might be a concomitant increase in the nucleic acid content of the liver accompanying the growth of the sarcoma. It has been shown by various workers that there is an increase in nucleic acid content in various organs due to the presence of a transplanted tumor. However, the extent to which the other two factors may contribute if at all, is not known.

The effect of X-irradiation on the incorporation of adenine-8-C¹⁴ into livers of both normal and tumor-bearing mice showed a slight increase of incorporation into liver PNA purines and a slight decrease of incorporation into liver DNA purines. The effect of X-irradiation on tumor tissue indicated a more definite increase in incorporation into the PNA purines. The incorporation of adenine into tumor DNA purines was about the same in control and X-irradiated mice; however, there appeared to be an increase in incorporation in the X-irradiated tumor DNA guanine.

The fact that X-irradiation did not alter the per cent of DNA purines derived from adenine in sarcoma-37 was very surprising. It seemed more likely that such a rapidly growing cellular tumor would show more profound changes in the incorporation studies of the precursor into DNA than would non-growing adult liver tissue. However, Harrington and Lavik (1954) reported that at 100 roentgens whole body X-irradiation the incorporation of P³² and orotic acid into thymus DNA was markedly inhibited, while the incorporation of adenine-8-C¹⁴ into DNA purines was not inhibited and even appeared to be above normal in certain cases. It was assumed that if the decreased incorporation of DNA precursors by X-irradiation represented a block in new DNA synthesis, the incorporation of precursor not inhibited by X-irradiation went either by a pathway which by-passed the X-irradiation block or also by exchange reactions with intermediates in equilibrium with pre-existing DNA. However, it should be mentioned that most of the X-irradiation studies carried out by most of the other investigators were with much higher doses of X-rays than were used in this investigation.

These variations in the results obtained by other investigators in incorporation studies with nucleic acid precursors after X-irradiation can most probably be at least partly attributed to the differences in the biological conditions and chemical methods used in the different laboratories.

THE ENZYMATIC OXIDATION OF BARBITURATES

by JACK ROSS COOPER*

This study on the enzymatic oxidation of barbiturates was initiated by the finding that the potentiating agent B-diethylaminoethyl diphenylpropylacetate (SKF 525-A), a compound which is relatively pharmacologically inert, exerted its effect by blocking the metabolism of a diversity of drugs both *in vivo* and in tissue slices. Metabolic pathways inhibited by SKF 525-A included sidechain oxidation of barbiturates, dealkylation of alkyl amines, deamination of amines, ether cleavage and phenol conjugation. The wide variety of metabolic pathways inhibited by SKF 525-A suggested that the potentiator acted on a factor common to the enzyme systems involved in drug metabolism. Consequently, a study was initiated to determine the mechanism of action of the potentiator and also to investigate the enzyme systems involved in drug metabolism. It was hoped that by using drugs as substrates, new biochemical mechanisms might be uncovered. It was decided to study the metabolism of the barbiturates since simple and specific methods were available for their determination and because of the importance of these drugs as sedative and hypnotic agents.

Little information is available regarding the metabolism of barbiturates in tissue slices or homogenates. A great deal of the early work in this field reported in the literature is of questionable significance due to faulty experimental procedures. The first definitive investigations on the *in vitro* metabolism of barbiturates were those of Dorfman and Goldbaum who showed that liver slices metabolized nembutal, pentothal, seconal, amytal, and nostal. Luminal, veronal, and ipral did not disappear. In addition evidence was presented for a slight degree of metabolism of pentothal both in liver homogenates and brain brei. Skeletal muscle minces were inactive. Gould and Shideman were the first workers to indicate the requirements of a cell-free homogenate to metabolize pentothal. Greatest activity was observed when the homogenate was fortified with nicotinamide, ATP, succinate, and cytochrome C. Liver, kidney, brain, heart, skeletal muscle, and intestine caused a disappearance of the barbiturates.

In this study, preliminary experiments were conducted using tissue slices incubated in Krebs-Ringer phosphate buffer. It was found that the oxygen barbiturates (evipal, nembutal, and seconal) were metabolized only by liver whereas the thiobarbiturates (pentothal and surital) underwent biotransformation in liver, kidney, and, to a small extent, brain. Heart and skeletal muscle had no activity. Using nembutal and evipal

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as substrates, metabolism of the barbiturates occurred in liver slices of all the species tested which included mouse, rat, guinea pig, and rabbit.

Homogenates of rabbit liver incubated with evipal in a Dubnoff incubator at 37° , exhibited only slight activity. Activity was restored by the addition of nicotinamide and either diphosphopyridine nucleotide (DPN) or triphosphopyridine nucleotide (TPN). However, when the homogenate was dialyzed, only TPN could restore activity. The specific requirement for TPN was also shown with nembutal and pentothal as substrates.

In dialyzed preparations, magnesium ions were found to activate the enzyme system. The optimal concentration of Mg^{++} was about 0.01 M.

No activity was observed under anaerobic conditions but equal activity was obtained when either air or oxygen was used as the gas phase.

When a rabbit liver homogenate was centrifuged at 9000 X G to remove nuclei and mitochondria, the enzyme activity in the resulting supernate equalled the activity in the whole homogenate. When this supernate was fractionated into microsomes and soluble fraction by centrifugation at 78000 X G neither of these fractions alone could metabolize evipal; only when they were added together did they form a preparation which possessed the same activity as the original supernate. Similar results were obtained with nembutal and pentothal as substrates.

The pH optimum of the reaction with evipal as substrate was from 7.2-7.6. Comparable results were obtained with tris or phosphate buffers.

Using a rabbit liver supernate preparation (a homogenate centrifuged at 9000 X G) with evipal as substrate, about 75 per cent of the drug disappeared in 60 minutes, after which time the reaction stopped. The addition of more liver supernate resulted in the disappearance of most of the remaining barbiturate indicating that the equilibrium point of the reaction had not been reached. A liver supernate preincubated at 37° without substrate showed no activity. These results indicate that the failure of evipal to be completely metabolized was due to the lability of the enzyme system.

The influence of the substrate concentration on the rate of the reaction of evipal, pentothal, and nembutal in the liver supernate was determined. Using a Lineweaver-Burk plot of the data, the maximum rate of metabolism of evipal was calculated to be 0.28 μ M/min./gram of liver, of pentothal, 0.15 μ M, and of nembutal 0.05 μ M.

As mentioned earlier, both microsomes and the soluble component of the liver cell are necessary for barbiturate metabolism—each component by itself has no activity. The part played by the soluble fraction in this system was investigated and found to consist in generating reduced TPN (TPNH), the actual coenzyme involved in barbiturate metabolism. Thus the soluble fraction may be replaced by any system capable of producing TPNH (e.g., glucose-6-phosphate, glucose-6-phosphate dehydro-

genase, and TPN) or by chemically prepared TPNH. This mechanism was shown to function for the metabolism of the three barbiturates tested, evipal, nembutal, and pentothal. The demonstration that both TPNH and oxygen were required for barbiturate oxidation suggested that TPNH might react with a flavoprotein in microsomes to produce H_2O_2 or some organic peroxide. However, the addition of catalase or various keto acids did not affect the metabolism of evipal in the liver supernate preparation.

The activation of barbiturate metabolism by Mg^{++} as discussed earlier was reinvestigated to see whether the cation was required for an enzyme system in microsomes or in the soluble fraction. No effect of Mg^{++} was observed in a system consisting of microsomes, TPNH, and evipal. Presumably, therefore, the magnesium activation in liver homogenates reflects the effect of the cation on the enzyme system or systems in the soluble portion of the cell which produce TPNH. It is well established that both glucose-6-phosphate dehydrogenase and isocitric dehydrogenase are activated by Mg^{++} at 10^{-4} to 10^{-5} M.

The products of barbiturate metabolism in the liver supernate preparation were isolated and identified by paper chromatography, pK, determinations, and counter-current distribution. In addition the metabolite of one of the barbiturates involved (evipal) was crystallized. The metabolism of evipal, nembutal, and pentothal was found to involve side-chain oxidation with no cleavage of the barbiturate ring. One transformation product of evipal was shown to be identical with keto-evipal I, a product isolated by Bush *et al.* from urine of dogs given the drug. In this compound one of the methylene groups on the cyclohexenyl sidechain of evipal is oxidized to a ketone. The structure of the metabolite was not completely determined by these workers. Nembutal metabolism was found to involve the production of two metabolites, one identified as "nembutal alcohol" [5-ethyl-5-(3-hydroxy-1-methylbutyl) barbituric acid] and the other as "nembutal carboxylic acid" [5-ethyl-5-(4-carboxy-1-methylbutyl) barbituric acid]. These products have been isolated from the urine of dogs injected with C^{14} nembutal by Titus and Weiss. One of the metabolic products of pentothal (the sulfur analog of nembutal) was identified as "pentothal carboxylic acid" [5-ethyl-5-(4-carboxy-1-methylbutyl) thiobarbituric acid], a metabolite found by Brodie *et al.* in the urine of humans administered pentothal. A second metabolite of the barbiturate was noted, in the enzyme preparation, which appeared as a faint spot on paper chromatograms and which had a similar R_f as nembutal alcohol. Since only trace amounts of this material appeared, positive identification could not be undertaken. It is tentatively assumed that this compound which has never been detected *in vivo* is probably "pentothal alcohol", analogous to nembutal alcohol.

Barbiturate metabolites, as a rule, are inactive as hypnotic agents. For

example, keto-evipal I, pentothal carboxylic acid, and nembutal alcohol, have been shown to have no activity. Since most barbiturates are excreted almost entirely in the form of their transformation products, it is evident that sidechain oxidation plays an important role in limiting the duration of barbiturate activity.

It is not yet known whether a single or a multiplicity of enzyme systems are involved in the oxidation of the various barbiturates. Evidence at hand favors the hypothesis that more than one system is involved. Thus, the metabolite of evipal is a ketone whereas nembutal and its sulfur analogue pentothal are oxidized to both an alcohol and an acid. It would be surprising to find that the same enzyme system catalyzed the formation of a ketone, an alcohol, and an acid. The carboxyl group of the acidic metabolites of nembutal and pentothal is in position four of the sidechain whereas the alcohol metabolites have their hydroxyl groups in position three—further evidence that more than one enzyme is involved in the oxidation of the parent compounds. In addition, it is likely that the enzyme systems which metabolize nembutal and pentothal are different since nembutal is oxidized only by liver whereas pentothal is also metabolized by kidney and brain.

The localization of the barbiturate enzyme systems in the microsomes is unusual since the majority of known enzymes reside either in the mitochondria or soluble portion of the cell and only a few are located in the microsomes. Other unusual properties of the enzyme systems are the requirements for both oxygen and reduced TPN. It is of considerable interest that other types of oxidative drug metabolic transformations have recently been found to be catalyzed by enzyme systems in microsomes and also require both oxygen and TPNH. These reactions include deamination, N-dealkylation, ether cleavage, and aromatic hydroxylation, metabolic pathways which account for the biotransformation of most drugs. Thus it is likely that the body possesses a few, highly non-specific, biochemical mechanisms for detoxifying foreign compounds which have a number of characteristics in common. As discussed earlier, all these reactions are inhibited by SKF 525-A, a compound that is relatively non-toxic in large doses. It is tempting to postulate that the enzyme systems involved in oxidative drug metabolism have no normal role in the body but have evolved as a defense mechanism for the detoxification of foreign compounds.

It is difficult to speculate on the mechanism of these enzyme reactions, particularly since the reactions are oxidative, yet require reduced TPN. It is probable that the various biochemical mechanisms have some step in common which is blocked by SKF 525-A. It is also probable that each mechanism involves a number of enzymes. TPN is required in catalytic amounts in the oxidation of barbiturates and yet cytochrome oxidase is not present in the enzyme preparation. This suggests that an

unknown hydrogen transport system is involved in the metabolism of barbiturates.

Further information regarding the mechanism of barbiturate oxidation will have to await purification of the enzyme systems. Preliminary attempts to solubilize microsomes without losing activity have to date been unsuccessful with procedures which include repeated freezing and thawing, preparation of an acetone powder, sonic vibration, and emulsification with desoxycholate.

REGULATORY EFFECTS OF LIGHT ON PLANT GROWTH AND REPRODUCTION

by ROBERT JACK DOWNS *

Plants are known to be involved in several photoreactions. The best known of these are photosynthesis, phototropism, and the periodic and non-periodic regulation of growth phenomena. This paper is concerned with the latter of these photoreactions.

Since it was not feasible to attempt to study all of the ramifications of periodic and non-periodic responses to light, an example of each was chosen for detailed investigation. The examples selected were the photoperiodic responses of the short-day plant, *Xanthium saccharatum*, Wallr., and non-periodic responses evidenced by dark-grown seedlings of dark-red kidney beans (*Phaseolus vulgaris*, L.).

Preliminary experiments showed that different photoperiodic treatments resulted in different stages of development of the primordium of the terminal male inflorescence of *Xanthium*. A study was made of the development of this inflorescence and a more precise assay of the response of *Xanthium* to photoperiodic treatment was obtained by differentiating the development of the male inflorescence into several stages.

Three inductive cycles of 12-hours light and 12-hours dark adequately promoted the initiation of flower primordia. A brief exposure, near the middle of each inductive dark period, to red radiation obtained from an 18-tube bank of G. E. Standard Cool White, 90-inch, slimline fluorescent tubes by means of a filter of two thicknesses of Du Pont red cellophane inhibited flower initiation. However, when the plants were irradiated with far red obtained from solar or incandescent-filament sources by two layers of red and two layers of blue cellophane immediately following the red interruption, the inhibitory effect of the red was reversed and flower initiation was repromoted. As little as 10 seconds of the far red obtained from a solar source was adequate to reverse the effect of an inhibitory red interruption. However, when exposures in excess of 2 minutes were given, the repromotive effect decreased. It was found that very long exposures to far red alone inhibited flower initiation at about the same rate as it failed to repromote flowering in plants previously inhibited by a dark period interruption. Several cycles of red-far red were applied with the result that the last irradiation determined the future response of the meristem, regardless of the previous irradiations. That is, when red radiation was applied last, the plants were vegetative; but when far

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red was the last irradiation, the plants initiated flower primordia. The number of cycles possible was limited because some repromotive control by far red was lost with each successive cycle.

Experimental evidence showed that the time lapse between the red and the far red irradiations was a limiting factor controlling the repromotive effect of the far red radiation. It was found with *Xanthium* that a time interval of about 30 minutes between the red and the far red irradiations was sufficient to cause complete loss of repromotion of flower initiation by far red. It was also found that the processes taking place during the interval between the red and the far red irradiations were temperature dependent; the loss of repromotion by far red being much slower at lower temperatures.

Brief exposures to visible radiation induced marked morphogenic changes in dark-grown seedlings of red kidney beans. Such irradiances inhibited the elongation of the hypocotyl, induced elongation of the epicotyl and leaf petioles, and promoted the expansion of the primary leaves and the straightening of the plumular hook. The most effective region of the spectrum in inducing these morphogenic changes was found by spectrographic techniques to be in the red between 6100 Å and 6600 Å, with a maximum at about 6400 Å.

Far red radiation applied after a brief exposure to red radiation reversed the potential effect of the red. Spectrographic procedures showed that the most effective region of the spectrum was between 7150 Å and 7400 Å, with a maximum at about 7300 Å.

The action spectra for the red and the far red actions had maxima and minima in the same general region of the spectrum as the action spectra for the control of germination of light-sensitive seed and for the control of flower initiation of *Xanthium*.

The operation of time between the red and the far red irradiations was slow. After eight hours only 40 per cent of the control by far red in repromoting hypocotyl elongation and 30 per cent of the far red control in reversing a red-induced leaf expansion had been lost.

Comparison of these facts with published and unpublished data of the author and others clearly shows that the initial photoreactions controlling many diverse plant responses are one and the same. Photoperiodic control of flower initiation in short-day plants, such as *Xanthium saccharatum*, Wallr. and *Glycine max*, Merr. var. *Biloxi*, and in long-day plants like *Hyoscyamus niger*, L. and *Hordeum vulgare*, L. var. *Wixtex* is through the same mechanism that controls the germination of light-sensitive seeds, e.g. *Lactuca sativa*, L. var. *Grand Rapids*, *Lepidium virginicum*, L., and the photomorphogenesis of dark-grown seedlings of red kidney bean, flax, peanut, and probably many others.

The facts obtained from this investigation are in accord with the scheme of the initial photoreaction proposed by Hendricks and Borth-

wick. In addition, the data presented herein indicate the presence of a reactant on the biologically active side of the reaction that removes the far red absorbing form of the pigment from the photoreaction. This reactant does not appear to be limiting in the case of Xanthium, for the far red absorbing form of the pigment is removed from the photoreaction in a matter of 30 minutes. In the case of red kidney bean, however, this reactant seems to limit the rate of removal of the far red absorbing form. Thus a supply of the far red absorbing form of the pigment is available to absorb radiation and consequently cause an apparent reversal of the response, even after an 8-hour interval between the red and far red irradiations. It was concluded that the reversal of the photomorphogenic response of dark-grown red kidney bean is limited only by the amount of growth that occurs during the interim between the red and the far red irradiations, while the reproduction of flower initiation of Xanthium is limited by the passage of time, and the effect of a red interruption may be reversed only when the far red radiation is applied within 30 minutes of the red irradiation.

THE IDENTIFICATION OF SEVERAL KETOSES IN HUMAN AND RAT URINE

by SIDNEY FUTTERMAN*

For more than a century it has been thought that urine contains minute quantities of sugar. An appreciable fraction of the non-nitrogenous reducing substances of urine was neither fermented by yeast nor oxidized by bromine. This fraction was thought to contain one or more ketoses. Evidence has been obtained for the presence of both fructose and xylulose in urine.

In this laboratory the occurrence of a pentose in rat urine was observed. It was found that bromine destroyed most of the aniline positive material but only a small portion of the orcinol positive material in the urine. An attempt was made to identify the sugars present in human and rat urine which were resistant to oxidation by bromine.

Urine was treated with ion exchange resins to remove inorganic ions and acidic or basic organic compounds, including glucuronides which interfered with the colorimetric methods for the quantitative estimation of sugars. The desalted urine was concentrated and aldoses were destroyed by oxidation with bromine.

Ketopentoses were separated from the residue after bromine oxidation by chromatography on a cellulose column. Xylulose was separated from ribulose by ion exchange chromatography. The pentoses were identified by their spectra with the orcinol reagent and by paper chromatography. From the xylulose fraction an osazone was obtained. The mixed melting points with added D-xylosazone and added L-xylosazone indicated that the urine sugar was L-xylulose.

The orcinol positive fractions from the cellulose column obtained after removal of the ketopentose fractions were subjected to ion exchange chromatography. The fractions were examined by paper chromatography. The presence of fructose and a heptulose was detected in human urine. No fructose could be detected in the urine of fasted rats but two heptuloses were present. The heptuloses were converted to anhydrides by hot acid and the fructose was destroyed by hot base. The presence of the anhydride formed from the urine heptulose was detected by its spectrum in the orcinol reaction. By paper chromatography of the heptuloses and anhydrides evidence was obtained which suggests the presence of sedoheptulose in human urine and sedoheptulose and guloheptulose in rat urine.

Xylulose and ribulose were identified both in human urine and the urine of fasted rats. Evidence was also obtained for the presence of

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glucose and aldopentoses in human and rat urine, however no attempt was made to investigate thoroughly the nature of the aldoses. It seemed likely that the ketoses identified in human and rat urine are of endogenous origin, but the possibility that they are produced by bacterial action in the gut was not ruled out.

A NEW TYPE BINARY SCALING CIRCUIT

by NELSON THOMAS GRISAMORE *

INTRODUCTION

The time required to solve various problems by computing machines is dependent upon the rate of operation of the various elements of the machine. Since some of these elements must operate an astronomical number of times before a solution is obtained, it is desirable that they function at a very rapid rate.

One of the most common circuits found in electronic digital computers and other devices employing digital operation is the bistable circuit. Usually there are a large number of these circuits in a machine so that, in the interest of economy and of the lifetime of the components, they should operate at as low a power level as possible.

The work reported in this investigation is concerned primarily with the development of a counter circuit that will operate at a higher frequency and a lower average power level than that of existing circuits.

A second development reported here concerns the development and use of a multistage grid-controlled electron multiplier tube.

THEORY

BISTABLE CIRCUITS

Electronic bistable circuits of the type devised by Eccles and Jordant† have the feature of being able to exist in either one of two stable states. This circuit contains two electron tubes. In one stable state one is conducting or "on" and the other non-conducting or "off". In the other stable state the former tube is "off" and the latter tube is "on" so that the two states are just the opposite of each other. Such a circuit will change from one state to the other if a suitable signal is introduced at some point of the circuit. The two functions of the circuit (i.e., having two stable states and being able to change from one state to the other) are dependent on the components of the circuit in different degrees. The ability to maintain one of either of the stable states is dependent upon the static characteristics of the circuit, whereas, the ability to change from one stable state to the other is dependent on the dynamic characteristics of the circuit. Therefore, the components of the circuit that are independent of frequency determine the stable states, while

* B.S. 1948, M.S. 1950, University of Illinois; Ph.D. conferred November 11, 1954. Professor in charge of research: Thomas Benjamin Brown, Professor of Physics; Zoltan Bay, Research Professor of Physics.

† W. H. Eccles and F. W. Jordan, *Radio Review*, 2, 143 (1919).

the components that are frequency dependent and those that are frequency independent determine the ability of the circuit to change states. The speed with which a circuit can change from one state to the other is taken to be the measure of the ability of the circuit to change states.

The essential problem of this work was to decrease the time required for the change of state of a bistable circuit. The approach to the problem was based on the idea of requiring the bistable circuit only to maintain the stable states, and to use an external circuit to drive the bistable circuit from one stable state to the other stable state. In this manner, the two functions mentioned previously can be made independent of each other. When the above idea is adhered to, the bistable circuit (hereafter called a slave flip-flop) can be designed to operate at low power levels and with small differences between the stable states. This, in turn, allows one to design a driving circuit which can drive the slave flip-flop at a much greater rate than a bistable circuit could drive itself.

To drive a slave flip-flop, it is necessary to have two simultaneous pulses of the opposite polarity. For various reasons an electron multiplier tube was used for the source of these pulses. If the current in such a tube is controlled by a grid, then triggering pulses can be converted into pulse pairs by taking one output from the anode and the other from the last dynode of the tube.

Self-driven Operation.—A great deal of effort has been expended in increasing the frequency with which a bistable circuit can drive itself by modifying the network of the circuit. However, no amount of such effort can change the theoretical maximum frequency at which a bistable circuit can operate since this frequency is dependent upon the voltage change between the stable states, the parasitic reactances (mainly capacitive) in the circuit, and the characteristics of the tubes used in the circuit.

An approximate calculation of the switching time of a bistable circuit can be made in the following manner. Imagine that a step voltage is applied to the grid of the "off" tube, the amplitude of the voltage being just sufficient to change the grid voltage from its "off" value to its "on" value. If this voltage pulse lasts at least long enough for the plate voltage of this tube to change by 90 per cent of the difference between the two stable states of the circuit, then the time required for the plate voltage to attain this value can be shown to be equal to $2.3 CV_e/I_e$. C is the capacitance of the circuit at the plate of the tube that must be charged or discharged when the circuit changes state; V_e is the voltage difference at the plate of the tube between two stable states; I_e is the current that would flow in the tube if the plate is maintained at the "off" potential while the grid of this tube is at the "on"

potential. The relation between these three quantities and the three on which the maximum frequency is dependent is obvious.

If the assumption is made that the period of the signals to be counted by the circuit is about twice the time required for the circuit to change from one state to the other then, the maximum frequency will be about $I_a/(5CV_a)$. A rough calculation of this value for a circuit containing tubes having low input and output capacitances shows the maximum frequency to be about 70 megacycles/sec. In a practical circuit, it is reasonably safe to say that one could not expect to attain a frequency of more than 50 megacycles/sec.

Recently a circuit has been reported* that will resolve three pulses, each separated by a period of 10^{-8} sec. This circuit uses one-stage grid-controlled electron multiplier tubes, and if an analysis, similar to the one mentioned above, is made of a bistable circuit containing these tubes then, one would arrive at a figure of about 200 megacycles/sec for the maximum frequency of operation.

Externally Driven Operations (Slave Flip-flop).—The use of a slave flip-flop and an external driving system allows one to increase the factor I_a/V_a without greatly increasing the circuit capacitance, C . In this case, I_a can be replaced by a current, I_m , provided by the external circuit, while V_a is limited only by the ability to design a slave flip-flop with a very small voltage difference between the two stable states. I_m is somewhat dependent upon the value of V_a but to a much smaller degree than the dependency of I_a on V_a .

The use of commercially available one-stage grid-controlled electron multiplier tubes as driving tubes would indicate a maximum frequency of 500 megacycles/sec. Thus, on the basis of the calculations presented here, it would appear that one could devise a practical circuit that would operate at a frequency of the order of 200 megacycles/sec. Part of the work in this paper describes an experimental multistage grid-controlled electron multiplier tube whose use as driving tubes would produce a maximum frequency of 1,000 megacycles/sec. However, at frequencies greater than 100 megacycles/sec difficulties appear in these circuits due to transit time effects in the tubes. It is not apparent as yet whether this effect will seriously limit the operating frequency.

At present we have an externally driven circuit which will resolve between three pulses separated by a period which would correspond to an operating frequency of 67 megacycles/sec. This circuit consists of a slave flip-flop driven by one-stage grid-controlled electron multiplier tubes.

* Joachim Fischer and John Marshall, "A Ten Millimicrosecond Scaler". National Electronics Conference (1953).

DRIVING TUBES

In the previous section it has been shown that the operating frequency of a system composed of a slave flip-flop and a driving circuit is dependent on the value of I_m/V_g . Due to the particular arrangement of this circuit, V_g is proportional to the change in grid voltage of the driving tubes that produces the current I_m . Therefore, the driving tube should have as large a value of I_m/V_g as possible, where V_g is the change in grid voltage of the driving tube that will produce a current change of I_m . For various reasons the driving tube should be maintained in cutoff during the quiescent periods of circuit operation; therefore, the current I_m is the amount of current that will flow in the tube when the grid of the tube is brought V_g volts out of cutoff.

It can be shown that the ratio of two currents through a triode is related to a change in grid voltage, $(V_1 - V_2)$, in the following manner

$$I_1/I_2 = \exp K(V_1 - V_2)$$

if the currents are small enough so that they are not space charge limited, and if the grid completely shields the cathode from the plate field. K is just e/kT where: e is the electron charge; k is Boltzmann's constant; T is the temperature of the cathode. The limitation on the size of the currents can be overcome by attaching an electron multiplying structure to the tube between the control grid and the output anode. In this manner, we were able to obtain a current ratio of 200:1 for a one volt change in the grid potential. If the tube is operated so that the output current corresponding to I_2 is one milliamperere (considered cutoff for this application) then, a one volt positive change in the grid potential should produce a 200 milliamperere output current corresponding to I_1 . Because of space charge effects at the output end of the tube, we could obtain currents of only 40 milliamperes for a grid signal of one volt. In this case the ratio I_m/V_g is 40 millimhos which is two or three times larger than can be obtained with any available commercial tubes.

A tube operating on these principles presents no great advantage over existing systems if it is operated as a Class A amplifier. However, as a pulse amplifier, it is definitely superior to any other practical circuit.

DESIGN OF BISTABLE CIRCUITS

GENERAL REQUIREMENTS

With respect to the power dissipation of electronic circuits, it is best to use receiving tubes instead of transmitting tubes if possible. It is doubly important in the case of circuits to be used in computing machines because of the large number of tubes used.

From the results of the preceding section, it is apparent that tubes having low input and output capacitance should be used in the circuit if the resolving time of the circuit is to be kept to a minimum. The construction of the circuit should follow the general rules used in constructing UHF circuits so that the parasitic capacitances of the circuit will be minimized.

The slave flip-flop circuits used in this work have voltage differences between the stable states much lower than are ordinarily encountered in a bistable circuit. For this reason, it is necessary to have a greater degree of symmetry in the circuit than is ordinarily required. This presents no great problem as far as passive elements of the circuit are concerned, but in the case of tubes and crystal diodes it means that they have to be selected on the basis of the closeness of their characteristics.

TRIODE TYPE

The triode type bistable circuit consists of two triode tubes connected by a dc network. This network connects the plates of each tube with the grids of the opposite tube. The resistors in the network are selected in a manner to cause the circuit to have two stable states.

Using the characteristics of the tubes and the voltages that are desired for the plates of the tubes when they are "on" and "off", the values of the resistors in the network can be determined. A graphical analysis, at this point, will show whether or not the circuits will have two stable states for these particular plate voltages. It will also show what changes are necessary to make the circuit bistable in case it does not have two stable states.

As a practical example, a 1633 tube was selected for the tube to be used and the resistor values were computed on the basis of the tube characteristics. The two plate voltages selected for this example were 70 and 100 volts. The two grid voltages corresponding to these plate voltages were 0 and -15 volts. (It is usual to have the grid of the "on" tube at zero bias and the "off" tube into cutoff.) The actual values that resulted when the circuit was constructed were 75 and 101 volts for the plate of one tube, 69 and 101 volts for the plate of the other tube, 0 and -16 volts for the grid of one tube, and 0 and -10 volts for the grid of the other tube.

PENTODE TYPE

The pentode type bistable circuit maintains its stable states in the same manner as the triode type except that the coupling of the tubes is between the screen grids and the plates instead of the control grids and the plates. A direct connection can be made between the plate of one

tube and the screen grid of the other tube because most pentodes are constructed so that the screen grid can operate at the same voltage level as the plate. This type of connection results in a simpler circuit, but the circuit must be designed experimentally since the tube characteristics pertaining to the control of the plate current by the screen voltage and vice versa are not published in the tube handbooks. A method of determining whether or not a particular supply voltage and plate resistor in combination with a particular pair of pentode tubes will result in a bistable circuit has been given by Regener.*

BATTERY TYPE

An examination of the triode and pentode type bistable circuits shows that both of them require a current flow in the connecting network between the two tubes. This, in itself, is not a bad feature, but it makes the design of the circuit more difficult and less flexible than is desired.

The method that was used to eliminate this current was to replace the voltage divider in the triode circuit network by a small battery. In this way, the potential difference was maintained by the battery, and the only current in the circuit was that flowing through the "on" tube. The grid of the "on" tube was maintained at zero bias by making the plate voltage of the "off" tube just equal to the battery voltage. In this case, the "off" tube's plate voltage is also equal to the plate supply voltage since there is no current through the plate resistor of this tube. The grid bias of the "off" is now just equal to the plate voltage of the "on" tube less the battery voltage. As a result of this arrangement, the voltage difference at the grids and the plates of the tubes between the stable states is the same, just as in the case of the pentode circuit. This circuit is similar to the triode circuit in that the grids do not draw current.

A battery triode circuit, using symmetrical tubes such as the 1633, can be designed without any great difficulty to have voltage differences between the stable states as small as 5 volts. In a similar circuit, using pentodes with the screen and suppressor grids acting as accelerators for the plate current, a voltage difference of only 2.5 volts has been achieved.

COMPARISON OF THE CIRCUITS

For the particular application of these flip-flop circuits it is best to have the voltage changes in the circuit all of the same magnitude. In this way, the circuit does not have to be designed so that voltage division networks are independent of frequency. For this reason, the triode type circuit is not as suitable as the pentode and the battery type circuits.

* V. H. Regener, *Rev. Sci. Instr.*, 17, 180 (1946).

The stray capacitance of the pentode circuit is probably of about the same size as that of the battery type. In the former case, the unknown capacitance is that associated with the screen grid, while in the latter case, the battery has a capacitance to ground that is probably of the same order of magnitude as the screen capacitance in the pentode circuit. Therefore, in this respect, the two circuits are of equal merit for use as slave flip-flops. However, because of the lack of current in the feedback network, the battery type circuit is much easier to design than any of the other types. It is possible to obtain smaller voltage differences with the battery type circuit because the first grid of the tubes has greater control over the tube current than the screen grid.

In all of these circuits, the tubes must be operated at a low plate potential, in order to have a small voltage difference between the stable states. At these low potentials the transit time of electrons through the tube is of the order of 10^{-8} to 10^{-7} sec. Thus, when the "off" tube is turned "on", the time mentioned above is required for the current to be established in this tube. If the capacitance load at the plate is small then, although the plate and grid voltages are established by the driving pulse, the charge on this capacitance can decay through the plate resistor before the tube current is established.

GRID-CONTROLLED MULTIPLIER TUBES

CHARACTERISTICS OF AN ELECTRON MULTIPLYING STRUCTURE

If electrons of sufficiently high energy impinge on certain surfaces, secondary electrons will be emitted from these surfaces in a ratio of secondary electrons to primary electrons greater than one. By arranging the geometry of the electric field around such a surface, it is possible to collect these secondary electrons on a second surface of the same material. If the energy of the electrons impinging on this second surface is great enough then, this second surface can be used as a secondary emitter in the same manner as the first surface.

An electron multiplier tube is constructed of a number of these secondary emitting surfaces (dynodes). The geometry of the system and the electric field from one dynode to the next is such that an electron current introduced to the first dynode (the dynode at the lowest potential) will be multiplied at each dynode as it progresses through the structure.

Designating the primary current as I_0 , the multiplication at each dynode as N , and s as the number of dynodes it follows that the current I_s leaving the last dynode will be

$$I_s = I_0 \times N^s$$

The current I_s is collected on an anode from which an output signal can be taken. The magnitude of the current I_s is eventually limited by

the space charge that occurs between the dynodes at the output end of the tube.

GRID-CONTROLLED MULTIPLIER TUBES

The idea of using a grid to control the primary current in an electron multiplier tube is not new. In fact, there are available at present two amplifier tubes (NU5857 and EFP-60) which use this principle. The main advantage of these two tubes is that the transconductance of the primary current is increased by the total multiplication of the current in the tube.

Experimental Grid-controlled Multiplier Tube.—We constructed a grid-controlled multiplier tube by adding a multiplying structure of 6, 7, or 8 dynodes to a 6AC7 tube. The primary current passes through a window in the plate of the 6AC7 and is accelerated to the first dynode by about 250 volts. The output of the multiplying section is collected on a second anode from which the signal is taken. The overall multiplication N^* is of the order of 10,000.

On page 7 it was noted that, under certain conditions, the current in a triode is related exponentially to the grid voltage. We approximated this situation in the experimental tube by connecting the first two grids of the 6AC7 together and operated this section of the tube in the current range below one milliamper with a plate voltage of 150 to 250 volts. For a particular tube having six dynodes and operated with one milliamper dc current at the output anode, we obtained a 90 milliamper increase in the output current with a 1.5 volt increase in the grid potential. The transfer characteristic of the tube is non-linear (almost logarithmic) so that its main application is in the field of pulse amplification.

Commercial Grid-controlled Multiplier Tubes.—The two grid-controlled multiplier tubes, NU5857 and EFP-60, are one stage tubes. These tubes are merely pentodes with a dynode inserted between the plate and the grids of the tube. The transconductance of the primary current to the dynode is about 6 millimhos so that, with a multiplication of about 4, the transconductance of the output current is about 25 millimhos. These tubes also have a value of about 25 millimhos for the ratio I_m/V_g mentioned on page 7.

COUNTING CIRCUITS

TRIODE TYPE

A triode type circuit was used to compare the method of driving the circuit by external pulses with the ability of the circuit to drive itself upon receiving an external triggering signal. The pulses and the signal

were generated by an RC discharge of a condenser. It was shown that the two plates of the flip-flop could be driven to the opposite state by smaller pulses than were required to trigger the action of the circuit. It was also apparent that the circuit reached the opposite state in a much shorter period of time when it was driven by a pair of pulses.

PENTODE TYPE

After the experiments with the triode flip-flop a pentode circuit was constructed and driving pulses were generated by the RC discharge method mentioned above. This circuit was tested first with one pair of driving pulses and then with two pairs. In the latter case, the first pair of pulses drove the circuit to the other stable state and the second pair returned the circuit to the original state. In all cases, the pulses had to be of the correct polarity, otherwise the circuit would not change to the other state. Each of the pulses was estimated to be about 10^{-9} sec in duration and the pairs were separated by 10^{-8} sec (propagation time through 2 meters of coaxial cable).

Next, using the pentode flip-flop, a circuit was constructed in which the experimental grid-controlled multiplier tube was used to drive the flip-flop. The plate of this tube was connected to one side of the flip-flop and the dynode to the other side. Short pulses (10^{-9} sec) were applied to the grid of the multiplier tube and the output of this tube drove the flip-flop to the opposite state if the pulses were of the correct polarity.

The use of the multiplier tube was extended to include the case where the grid signal for this tube was supplied by a preceding flip-flop. The arrangement of this circuit was as follows: first, there was a pulse generator of the type mentioned in the first paragraph of this section driving a pentode flip-flop; second, this flip-flop drove a grid-controlled seven-stage electron multiplier tube; and last, this multiplier tube drove a second pentode flip-flop. Single and double pulse pairs were generated in the first part of the circuit and the action of the total circuit was as would be expected for such an arrangement. If the flip-flops were in the correct states, the pulses from the pulse generator and from the multiplier tube would drive the flip-flops. If they were not in the correct states then no change of state was observed. The circuit was also tested by applying a single pulse to the first flip-flop so that this flip-flop drove itself to the other state. In this case, the action time was so long (10^{-6} sec) that no signal was conducted through the ac coupling to the multiplier tube and consequently there was no output of this tube to drive the second flip-flop. This last experiment showed the dependence of the action of the whole circuit on having an input to the first flip-flop that would drive it to the other state in a very short time.

It is obvious that, to drive the flip-flop in both directions, two grid-controlled multiplier tubes are needed. We next constructed a circuit consisting of a pentode flip-flop and two NU5857 tubes (see page 15). The multiplier tubes were biased by the plate voltages of the flip-flop in such a manner that one of the tubes was just at cutoff and the other was below cutoff by an amount equal to the voltage difference between the stable states of the flip-flop. A negative pulse was introduced to the circuit at the cathodes of the two multiplier tubes. This signal was of an amplitude sufficient to cause only the tube biased at cutoff to conduct. The tube drove the flip-flop to the other state and thus changed the bias of the multiplier tubes so that, upon receipt of the next input pulse to the cathodes, the other tube would conduct and drive the flip-flop back into the original state.

The first circuit of this type that we constructed could be driven by an input pulse only 5×10^{-8} sec long. The minimum resolving time between the two pulses was 2.5×10^{-7} sec.

TRIODE BATTERY TYPE

The next circuit constructed contained a triode battery type of flip-flop and used the same multiplier tubes as mentioned above. The voltage change between the stable states of the flip-flop was reduced and various other changes were made to shorten the time constants in the circuit. Cathode followers were used as impedance transformers at various points of the circuit and crystal diodes were used to decouple the flip-flop circuit from any action of the driving circuit, except for driving pulses and bias control of the multiplier tubes. The final circuit operated with the plates of the tubes having stable voltages of 9 and 13 volts. The circuit would change state upon applying an input signal of duration 10^{-8} sec, and the resolving time between two pulses was 1.5×10^{-8} sec. The work is continuing and some slight improvements have been made by using the EFP-60 multiplier tubes as the driving tubes in the circuit.

ASSOCIATED INSTRUMENTS AND CIRCUITS

EXPERIMENTAL PULSE GENERATOR

A necessary adjunct to a high speed flip-flop circuit is a pulse generator which will produce pulses short enough and at a high enough frequency to utilize fully the possibilities of the flip-flop. In this case, we need a generator which will generate pulses as short as 10^{-8} sec and at a frequency of 50 megacycles/sec or greater.

The characteristics of the multi-stage grid-controlled electron multi-

plier mentioned on page 14 are suitable for the generation of short pulses. Because of the current amplification through the tube, it is possible to feed back the output of the anode to the cathode or the output of the last dynode to the control grids. When either of these systems of feedback is constructed by attaching a long coaxial cable between the two feedback points, a short pulse ($< 10^{-8}$ sec) can be recycled through the tube and the cable. The length of the pulse is determined by the transfer characteristics of the tube and the propagation characteristics of the cable.

The actual circuit we constructed consisted of a seven-stage grid-controlled electron multiplier tube with 100 meters of 72 ohm cable connecting the last dynode and the control grids of the tube. This produced a pulse of about 10^{-8} sec which was recycled through the system at a rate of 2 megacycles/sec corresponding to the propagation time through the cable. No attempt was made to operate at a higher frequency, since the tubes that we constructed did not have the ability to dissipate the power that would be generated at higher frequencies.

It is apparent that this system can also be used as a memory circuit for a number of these short pulses, if the feedback cable is much longer than the recycled pulse. The circuit is analogous to the memory circuit using a mercury sonic delay line except that it can store much shorter pulses and can have a shorter recycling time for the same number of pulses.

COMMERCIAL PULSE GENERATOR

To test the flip-flop circuits, it was necessary to have a pulse generator that would produce one pulse at a low repetition rate. We used a Spencer-Kennedy Model 503 pulse generator which will produce a pulse whose amplitude can be varied from 0.1 to 100 volts and whose length can be as short as 10^{-7} sec. The upper limit to the length of the pulse is somewhat shorter than the period determined by the repetition rate of the instrument. This rate is variable from 50 to 150 cycles/sec.

PULSE MULTIPLIERS

The above mentioned pulse generator is suitable for determining the amplitude and length of a single pulse that will change the state of the circuit, but the resolving time of the circuit can be determined only by applying two or more pulses separated by an arbitrary time interval.

To produce two closely spaced pulses, we attached a stub line to the pulse generator thereby producing a reflected pulse of the same polarity at the output. The time interval between the two pulses depends on the length of the stub line. Since the two pulses are not of the same amplitude, we connected the output to an amplifier so that the first pulse

was clipped to the size of the second pulse by the limit of the amplifier output. This method was suitable only for two pulses since more than one stub line created a large amount of ringing that was also amplified.

The second method that we used allowed us to produce almost any number of pulses separated by an arbitrary time interval. The method consisted of applying one positive pulse to the anodes of a number of diodes and taking the output from a coaxial cable along which the cathodes were spaced at arbitrary intervals. In this way the original pulse is divided (in amplitude) into a train of pulses. Pulses of the opposite polarity can be obtained by interchanging the anodes with the cathodes and applying a negative pulse to the common point of the cathodes.

OSCILLOSCOPES

For work of this type it is imperative that one have the use of a high speed oscilloscope, if any quantitative measurements are to be made. We used two different oscilloscopes: for the first period of the work we had a Tektronix 514D oscilloscope, which has a maximum sweep speed of 10^{-7} sec/cm and an amplifier rise time of 5×10^{-8} sec; later we used a Tektronix 517 oscilloscope, which has a maximum sweep speed of 5×10^{-9} sec/cm and an amplifier rise time of 7×10^{-9} sec.

DISCUSSION AND CONCLUSIONS

The experimental work reported in this dissertation was done primarily to demonstrate the possibility of driving a slave flip-flop circuit by external pulses. The results obtained with the circuit mentioned on page 18 are certainly not the ultimate that can be achieved, but they do show that it is possible to drive such a circuit at a higher frequency than the circuit can drive itself. The independence of the slave flip-flop and the driving circuit is the main point emphasized in this work, but the entire circuit should be compared with the more conventional type circuit since they both operate by driving themselves to the opposite state upon receiving an external signal.

The work is continuing, and it is expected that an operating frequency of greater than 100 megacycles/sec will be achieved. Work is being done on further development of the multi-stage grid-controlled multiplier tubes.

We would also like to explore other methods of current control, such as, the placing of a grid before one of the dynodes of a multiplier tube, and the possibilities of using a beam deflection system to obtain a sharper characteristic for the multiplier tube.

Another point to be investigated is the possibility of constructing slave flip-flop circuits using specially designed tubes to achieve lower voltage differences between the stable states of the circuit.

A STUDY OF CELL TYPES IN THE MAMMALIAN EPIDERMIS UNDER NORMAL AND ABNORMAL CONDITIONS

by CHARLES EDWARD MCCREIGHT*

The importance of the skin and its appendages in the economy of the body cannot be over-emphasized. All contact with the immediate environment involves the integument, and its role in protection is vital to all animal life.

For many years a great deal of scientific study of diseases of the skin has been done, and there are numerous descriptions of the normal histology of the skin. More detailed studies have involved descriptions of the cytological aspects. However, there are many aspects of the structure of the skin in which details are lacking. Among the more obvious of these is a better understanding of the types of cells that are encountered in the epidermis, which is the stratified squamous epithelium forming the outermost portion of the skin.

The classical descriptions of the epidermis of man and of all higher animals list the strata which make up this epithelium. These consist of the basal and spinous layers, together called the stratum germinativum or stratum Malpighii, the stratum granulosum, the stratum lucidum, and finally the stratum corneum, which is composed of dead and horny cells and which makes up the most superficial layer of the epidermis.

From time to time various investigators have described other types of cells, not necessarily of the epithelial type, which have been found among the cells of the epidermis, chiefly in the basal and spinous layers. Cells of a pigment-forming variety have been studied by a number of workers. Wandering cells of various types have been described for the epidermis. Information on the proportions, distributions, and roles of these cells is far from complete. The work reported here was done in an attempt to add something of worth to our understanding of these little known cell types of the epidermis.

Among the more easily demonstrated of these cells are the lymphocytes and clear cells. Studies by Andrew and Andrew (1949) have produced evidence that these cells may be related via various cells intermediate in morphology between the two and called "intermediate cells" and that there may be a transition of the lymphocyte via the intermediate cell to a clear cell, which in turn may differentiate into an epithelial cell. Mitotic figures, though difficult to identify in early stages, can be seen generally without great difficulty in tissues stained with certain basic dyes. The lymphocytes, intermediate cells, clear cells, and mitotic figures were selected for special study in the present investigation.

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For purposes of correlation and comparison of data, a study of the cell types of the epidermis must necessarily be limited to certain carefully selected specimens. Mice were selected as the experimental animals because they are relatively inexpensive and are maintained with little difficulty. The epidermis of the mouse contains all strata that are described for the mammalian epidermis, and the stratum germinativum, the principal site of the cells to be considered, is presented in simple form. The dorsal scapular area was chosen as the site for collection of specimens.

Animals of the Swiss MS-1 Albino and C57 Black strains, all in the age range of 14 to 16 weeks, were employed. The albino mice were all males and the C57 mice were of both sexes. In view of the mitotic rhythm that has been described for the epidermis of the mouse, all animals were sacrificed at about the same time of day, around 3:00 P.M. Tissues were fixed in 10 per cent formalin, embedded in paraffin, and cut at 6 micra, after which several stains were employed. The Harris' hematoxylin and eosin was used for most of the studies that followed.

The study of cell types of the epidermis of the normal mice constituted the chief goal of the work, but certain treatments were employed in attempts to alter the cell proportions to some extent in the hope of gaining information on the probable functions of these cells. Male albino mice were treated for 1, 2, and 3 week intervals with daily topical applications of estrogenic hormone cream. A limited number of like animals received similar treatments with lanolin in an attempt to elucidate the role of the hormone and that of the base cream in any effects that might be observed. A group of the C57 mice, including individuals of both sexes, received X-ray irradiation of a mild degree over the localized area from which skin was to be removed, and these animals were sacrificed 24 hours later.

All slide study was done using oil immersion magnification, and photomicrographs were made at a magnification of 1,350 times. Measurements of epidermal width were accomplished with use of an ocular micrometer. For each animal a total of 1,000 cells was counted and classified. In addition to placing these in their proper categories, recordings of the relative positions of these cells in the stratum germinativum were made. Percentages of the various cell types for each animal and their means for groups of similar specimens were calculated. The means for the various groups, whether treated or untreated, were compared with one another on a statistical basis, and data were reported in the form of charts.

Lymphocytes, intermediate cells, and clear cells were found to be present in considerable number in the epidermis of untreated mice of both strains. Mitoses were few in number, but more frequent than in the epidermis of several species for which data are available. Mean percentages of the various cell types compared closely for the two strains of

mice. For instance, the albino animals had 4.26 per cent of lymphocytes, while the C57 animals had 4.25 per cent. Intermediate and clear cells each ranged slightly above or below 3.00 per cent for both strains. Mitoses were 0.30 per cent for albinos and 0.12 per cent for C57 mice.

The thickness of the epidermis varied considerably for the two categories of mice. That of the albino was invariably thicker, as shown by measurements and described in terms of cellular layers in the germinal stratum. The stratum germinativum of the C57 animals at places consisted of only one layer of cells. It was interesting to note that in all of these mice there was a stratum granulosum consistently present. The absence of this layer in young and middle-aged albino rats was described by Andrew (1951). The usually described basal layer of cylindrical cells was hardly seen in the epidermis of these mice. Most cells of the germinal stratum were polyhedral or ovoid, and elongation of cells was generally in a direction parallel with the surface of the corium.

The chief effect on the epidermis that was noted after applications of the estrogenic ointment was a thickening of the stratum germinativum, which was most pronounced in the animals sacrificed after the two week interval of treatment. Three weeks of the same treatment resulted in a thinner epidermis than that which was seen after the one week of treatment. The proliferation involved both hyperplasia and cellular hypertrophy. The layers of cells were more numerous than in untreated animals, the stratum germinativum having increased from 2 or 3 to 4 to 6 layers of cells. Some increase in the number of the cells of the granular layer occurred and the granules became much more conspicuous. A similar, but less pronounced, effect was seen with the use of the lanolin.

Cellular multiplication in the epidermis of the estrogen treated animals was accompanied by a simultaneous increase in mitosis of considerable degree and probably can be attributed largely to this method of production of cells, but auxiliary methods are not completely ruled out.

Lymphocytes and intermediate cells reached their highest proportions at the end of the second week of estrogen applications, where they amounted to 7.73 and 5.17 per cent of the cells of the stratum germinativum, for each a percentage almost twice that of the value seen in untreated specimens. Clear cells, however, reached their peak at the end of 3 weeks of the treatments.

Mild irradiation of the skin of C57 mice produced no appreciable change in thickness of the epidermis. However, there were significant increases in proportions of lymphocytes and intermediate cells. The highest percentages of each of these cell types were seen in this irradiated epidermis. Clear cells, however, were present in less amount than was observed for the untreated specimens, and there was a small, but insignificant increase in the level of mitotic figures.

The observations of the morphology, percentages, and distributions of

the lymphocytes, intermediate cells, and clear cells of the epidermis of these mice correlate well with the data reported by Andrew and Andrew (1949) for the epidermis of another rodent, the albino rat. It seems entirely possible that the transition of lymphocytes to clear cells, with a further differentiation of these to the regular epithelial cells which they suggest for the rat may well be applicable for the mouse as well. Future investigations along the lines followed in this study may aid in clarification of the roles of these cells within the epidermis.

MYCORRHIZAL DEVELOPMENT IN *PINUS VIRGINIANA* AS INFLUENCED BY A GROWTH REGULATOR

by JOHN GILBERT PALMER *

There has been no report under American conditions which illustrates adequately the variations of pine mycorrhizae and no detailed report which records the morphology of the mycorrhizae of *Pinus virginiana* Mill., a common old-field species on the coastal plain soils of the western shore of Maryland and in the vicinity of Washington, D. C. Because this pine frequently occurs in pure stands in this region, it is possible to collect Hymenomycetous species of fungi which will most likely form mycorrhizae with the short roots. In addition data and information obtained from field observations and collections were needed for satisfactory interpretations of laboratory experiments with *P. virginiana*. Consequently collections of the short roots, including mycorrhizae, were made between October 1, 1952, and August 18, 1954, from six sites which had been seeded naturally to this species of pine. The sites included three which supported mature stands of medium-aged to mature trees the short roots of which were to be found in duff, one in which seedlings were growing in clay fill, one in which seedlings were growing in sand, and one in which seedlings were growing in a cinder fill. All sites were located in Prince Georges County, Maryland, within a few miles of Seabrook.

Macroscopic and microscopic examination revealed that most short roots had been converted to mycorrhizae, pseudomycorrhizae, or a combination of the two and that root hairs were lacking. The mycorrhizae of *P. virginiana* collected from these substrates varied considerably in size and form, being unbranched, singly forked, nodular, and coralloid. The latter type was found to be most common in all substrates, was normally very extensively branched in cinders, but generally was little branched in other soils. Structures externally resembling the mycorrhizae of the *Cenococcum graniforme* type were characteristic of dessicated humus but microscopic examination revealed that none had living extra-stelar tissues. In the moist humus pockets scattered in dry humus the nodule type was often found. With the exception of those occurring in the sand stained red, the color of the mature mycorrhiza was that of the fungus component. Mantles varied in extent and in number of hyphal connections to the soil. Non-functioning mycorrhizae or portions of mycorrhizae characterized by necrotic extra-stelar tissues were usually abundant, but the true pseudomycorrhizae characterized by inter-

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cellular infection by the fungus of root meristem, cortex, and stele were rarely found.

Active areas of mycorrhizae formation on the root systems of *P. virginiana* were found to be three: (1) new short roots arising back of the growing long root tip, (2) short roots produced on long roots in various stages of secondary development, and (3) renewed meristematic activity of older short roots which may or may not have exhibited necrosis of extra-stelar tissues. Sectioned active mycorrhizae had the internal organization of tissues characteristic of the ectotrophic form, but absence of the ectendotrophic form does not mean that such do not exist on *P. virginiana*. Though the mantles varied in thickness and number of hyphal connections to the soil, they were usually pseudoparenchymatous. The epidermis of the mycorrhizae was crushed; the cortex was two cell layers in thickness and intracellular penetration by the fungus ("Hartig Net" formation) incomplete. The process of splitting of the meristem to form singly branched or coralloid short roots was observed in material from nature, and the histology was recorded by means of photographs for roots which had not immediately been subjected to the fungus invasion and conversion to mycorrhizae.

In the laboratory experiments aseptic techniques were employed throughout, and all pine seedlings were grown in an artificially lighted, temperature-controlled room. Since previous experiments with the effects of indole acetic acid upon excised and intact root systems of pine had been performed in nutrient solution culture, the vermiculite culture method for obtaining rapid identifications of mycorrhizae-forming fungus species was selected for the laboratory experiments. Two Hymenomycetous species of fungi, *Amanita rubescens* Fr. (Depauperate Form) and *Amanita caesarea* (Scop.) Pers., formed mycorrhizae with *P. virginiana* using this method.

Because it had been suggested that indole acetic acid might be responsible for the coralloid forms found among the mycorrhizae of pine and nutrient solution culture had revealed that the substance would cause single forking of short roots and stimulation of their production on long roots, seedlings were grown in an aseptic vermiculite substrate and their root systems treated by dilution of the nutrient solution with beta-indole acetic acid. Treatment of one-month-old seedlings with dilutions of 1 part of the growth regulator to 25,000, 50,000, and 100,000 parts of the nutrient solution resulted in reduced total root lengths when compared to untreated root systems after one month. At five dilutions (1:25,000, 1:50,000, 1:100,000, 1:200,000, and 1:300,000) lateral roots and tap roots were generally thickened and discolored along much of their length. The dilutions of 1:25,000 and 1:50,000 stimulated greatest proliferation of new roots on the lateral roots and the dilution of 1:100,000 caused the greatest proliferation of new roots on the tap roots

and the greatest number of forked short roots. Individual short roots responded to the dilutions from 1:25,000 through 1:300,000 by (a) browning of all growth increment made following addition of the indole acetic acid, (b) constricting at the point of contact in some instances, and (c) thickening of subsequent growth increments in some cases, which was also distinguished on the roots of remaining treatments (1:500,000 and 1:1,000,000). The internal anatomy of indole acetic acid induced and treated short roots was extremely variable and included disorganization of the meristem and re-orientation and/or proliferation of cortex cells. Treatment of roots of nine-month-old seedlings with a 1:100,000 dilution of indole acetic acid showed that a healthy physiological state is required of long roots for proliferation of short roots, and the forking response was not so evident.

Simultaneous inoculation with a suspension of *Amanita rubescens* and treatment with a 1:100,000 dilution of indole acetic acid of the root systems of aseptically grown, three-month-old *P. virginiana* seedlings resulted in the extensive proliferation of short roots and their subsequent conversion to ectotrophic mycorrhizae. The response of forking by short roots and of proliferation of new roots on old long roots suggests that in nature indole acetic acid or a substance with similar growth-promoting properties produced by mycorrhizal and other fungi is the stimulus. The results of the laboratory experiments also appeared to indicate that treatment of seedlings about to be transplanted from nursery beds and those stagnated among naturally seeded stands might respond to treatment with indole acetic acid, increasing root surface area and establishing a better shoot-root ratio.

METABOLIC REACTIONS OF *PASTEURELLA PESTIS*

by MELVIN SANTER*

Pasteurella pestis has been the object of intense investigation since it was first isolated by Yersin in 1894. The consequence of these studies was the accumulation of a vast literature mainly devoted to (1) the pathogenesis of the disease, (2) the antigenic nature of the organism, and (3) the preparation of an effective vaccine. More recently there have been reported investigations on the metabolism of this bacillus. These latter data have been to a great extent fragmentary and are scattered throughout the literature. The purpose of this study was to more fully document the anaerobic and aerobic metabolic pathways of this organism.

There are two major pathways for glucose breakdown. These include the Embden-Meyerhof scheme and the "hexose monophosphate shunt" system. By a variety of procedures, which included the use of (1) resting and growing cells of *P. pestis*, (2) dried cell preparations, (3) cell-free extracts, and (4) radioactive isotopes, it was shown that this organism dissimilated glucose by both pathways.

Untreated resting cell suspensions of *P. pestis* were observed to oxidize glucose and to a lesser extent ribose. Some of the phosphorylated hexoses, however, were not metabolized by such unaltered cell suspensions. Lyophilized preparations of the same organism oxidized all of the C_6 phosphorylated sugars including gluconic acid. Resting cells of *P. pestis* also exhibited considerable fermentative ability. The chief products of glucose fermentation were lactic, acetic, and formic acids; ethanol; and carbon dioxide. Small amounts of succinate and pyruvate were also detected. Ribose was fermented to acetate, formate, and ethyl alcohol. Little carbon dioxide was noted in this case. Pyruvate was fermented to formic and acetic acids, carbon dioxide, and lactate. Quantitative analysis of the products formed from pyruvate indicated that this compound was metabolized *via* two known pathways involving (1) a dismutation reaction, whereby two moles of the C_3 keto acid were converted to one mole each of acetate, lactate, and carbon dioxide, and (2) a "phosphoroclastic split" of the *Escherichia coli* type whereby a mole of pyruvate yielded a mole of acetate and a mole of formate.

In an effort to determine the origin of the evolved CO_2 in the glucose fermentation and the pathway of glucose dissimilation by resting cells, *P. pestis* was allowed to dissimilate 1- C^{14} -glucose under anaerobic con-

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ditions. The CO_2 evolved contained little radioactivity. Under the experimental conditions employed, less than 1 per cent of the glucose metabolized was decarboxylated to a pentose. These data indicated that the CO_2 produced from glucose under anaerobic conditions came from a source other than the conversion of carbon number one to CO_2 . The carbon dioxide evolved during the course of glucose fermentation appeared to arise from the dismutation of pyruvic acid.

The complete distribution of radioactivity in the products of 1- C^{14} -glucose fermentation was consistent with the operation of the Embden-Meyerhof scheme. The bulk of the radioactivity was recovered in lactate, acetate, and ethanol. The carbon dioxide contained little activity and the formic acid was completely inactive.

To provide additional evidence for the operation of the Embden-Meyerhof pathway, the specific activity of the formed succinate was compared with the initial specific activity of the 1- C^{14} -glucose. This scheme mandates for all the glucose to be initially converted to pyruvic acid. If this occurs each molecule of glucose yields two molecules of the C_3 keto acid. With the hexose labeled in the one position, one C_3 unit will be radioactive while the other one will not. The formed C_3 units will mix and the specific activity will be one half of the specific activity of the initial glucose. If the C_3 unit condenses with a relatively inactive carbon dioxide molecule to form succinate, the specific activity of the latter C_4 acid should likewise be one half of the specific activity of the 1- C^{14} -glucose. This was found to be the case, for the specific activity of the succinate was one half of the specific activity of the initial hexose.

These experiments indicated that the "hexose monophosphate shunt" was of little quantitative significance in the anaerobic dissimilation of glucose by nonproliferating, resting cells of *P. pestis*. However, the observations that dried cells metabolized gluconate and that cell-free extracts converted glucose-6-phosphate to a pentose phosphate suggested that the shunt pathway may be involved in some way in the overall metabolism of *P. pestis*. Since Cohen (1951) suggested that the primary role of the shunt pathway is to supply pentose phosphates for synthetic reactions, it was of interest to determine whether this alternate pathway was involved in the growth of this bacterium.

Resting and growing cells of *P. pestis* were allowed to oxidize 1- C^{14} -glucose. The specific activity of the respiratory CO_2 produced during growth was greater than the specific activity of the CO_2 produced by resting cells. In the case of resting cells, 2.8 per cent of the total radioactivity (as measured by glucose disappearance) appeared in the evolved CO_2 . During growth, 1.9 per cent of the total radioactivity was found in the gas. Consequently, more of carbon number one of the glucose molecule was converted to CO_2 by resting cells than by actively growing

cells. Quantitatively, it would appear that resting cells converted 33 per cent more of carbon one of glucose to CO_2 than do growing bacteria. Despite this fact, the specific activity of the respiratory CO_2 produced by growing cells was greater than the specific activity of the CO_2 evolved by non-proliferating cells. It appeared, therefore, that during growth there was a preferential conversion of carbon number one of glucose to CO_2 . Additional evidence for these conclusions was provided by enzymatic analysis of cell-free extracts. It was found that glucose-6-phosphate was converted to ribose-5-phosphate. Ribose-5-phosphate was metabolized to a triose phosphate and a C_2 -fragment which may be glyceraldehyde.

At the start of our investigations concerning respiratory mechanisms in bacteria, the published data were varied and were interpreted in a number of ways. One of the reasons for this was the inability to apply to bacteria those criteria which had been used successfully in the work with animal tissues. Previous experiments utilizing the carrier technique were particularly subject to criticism for the possibility existed that there was non-equilibration between intracellular and extracellular intermediates.

In an attempt to overcome these difficulties another approach was used to study acetate oxidation by *P. pestis*. It involved the study of the labeled intermediates formed during acetate oxidation without the addition of carrier.

Initial carrier experiments resulted in the following observation: (1) a high C^{14} content in the evolved CO_2 when acetate was metabolized alone or in the presence of α -ketoglutarate or citrate, (2) a low C^{14} content of evolved CO_2 when acetate was oxidized in the presence of succinate, (3) a high C^{14} content in succinate, and (4) the absence of detectible C^{14} in α -ketoglutarate and citrate. From these data it appeared that resting cells of *P. pestis* metabolized acetate via succinate and not α -ketoglutarate and citrate. However, as suggested previously, activities in externally added carriers may not have necessarily reflected the true activities of these intermediates as they occurred metabolically inside the cell. It was, therefore, desirable to study the oxidation of labeled acetate in the presence of large amounts of cells without added carrier.

Resting cells of *P. pestis* were allowed to metabolize methyl-labeled acetate for varying periods of time. At the end of each interval, the cells were disrupted and the intracellular tricarboxylic acid cycle intermediates isolated. Superficially, the results derived by this approach appeared analogous to those described with externally added carriers. Differences, however, became apparent when specific activities and not total activities were considered.

After each time period the specific activities of the intracellular pools

of both succinate and citrate varied within narrow limits. In addition the intracellular concentrations of these acids remained essentially constant. This was to be expected if the reactions that operated for the oxidative removal of acetic acid were cyclic.

The intracellular pool of succinate was at least 70 times greater than that of citrate. Consequently, the total activity of succinate would be expected to be about 70 times greater than that of citrate. This was found to be the case.

When the specific activity of the respired CO_2 was compared with the specific activity of the carboxyl carbons of the intracellular Krebs' cycle intermediates during the oxidation of methyl-labeled acetate, complete equivalence was found between the two. This was to be expected if acetate, during its oxidation, cycled and the respired CO_2 was coming off from successive decarboxylations of the tricarboxylic acid cycle intermediates.

By studying the variation due to time in the specific activities of the intracellular intermediates of the tricarboxylic acid cycle during acetate oxidation, it was apparent that citrate precurred succinate during the initial stages of the experiment. These data were consistent with the operation of a conventional tricarboxylic acid cycle.

The evidence for the participation of *alpha*-ketoglutarate in acetate oxidation was largely indirect and included the following observations: (1) Although *alpha*-ketoglutarate could not be isolated, the band corresponding to the C_5 keto acid on a paper chromatogram always contained some radioactivity. Therefore, the specific activity of the acid was extremely high and it could have been a precursor of succinate. (2) The occurrence of the enzymes aconitase and isocitric dehydrogenase in this organism, which converted quantitatively citric acid to *alpha*-ketoglutaric acid.

One additional observation should be made in connection with the aerobic metabolism of *P. pestis*. The oxidative metabolism of this organism was sluggish when compared to other bacteria. This low metabolic behavior is reflected in the high concentration of intracellular tricarboxylic acid cycle intermediates. Furthermore, it is interesting to correlate these observations with the high endogenous respiration exhibited by *P. pestis*. With such large intracellular pools, it was expected that the endogenous metabolism of this organism would be high.

KINETIC AND INHIBITION STUDIES ON PANCREATIC CHOLESTEROL ESTERASE

by HOWARD S. STERN*

In recent years great advances have been made with respect to our knowledge of cholesterol metabolism. Investigations involving tracer techniques have shown that the body is able to synthesize cholesterol from smaller molecules. The role of cholesterol as a precursor of the bile acids and the sex hormones has been reported. In the adrenals, where the turnover of cholesterol is higher than in any other tissue, there can be little doubt as to the conversion of cholesterol to adrenal hormones. Cholesterol is the precursor of 7-dehydrocholesterol which upon irradiation is converted to vitamin D. Through the formation of esters with fatty acids, cholesterol functions as a transporter of fatty acids. As an intimate part of the cell wall and by its association with proteins and other lipids, it contributes to the physicochemical characteristics of protoplasm and possibly helps to regulate the passage of substances through the cell membrane. Cholesterol has also been shown to act as a neutralizing agent toward certain toxins and as an insulating material around the myelin sheath of nerves.

Normally, the serum or plasma cholesterol, which remains quite constant, consists of approximately one-third free and two-thirds ester while the cholesterol associated with the red cell is almost entirely in the free form. Changes in cholesterol levels usually involve the ester fraction. Whereas a fairly constant free cholesterol level is maintained in the tissues, the ester fraction is subject to considerable fluctuation. The precise mechanism by which the body regulates the levels of cholesterol in the blood and tissues is unsettled. Normally, cholesterol synthesis appears to vary inversely with the amount of cholesterol absorbed from the intestines. Presumably the conversion of cholesterol to the bile acids, 7-dehydrocholesterol, the sex and adrenal hormones, and the amount of ingested fat are some of the factors which aid in this regulation.

It is agreed by many workers that an enzyme, cholesterol esterase, plays an important role in cholesterol metabolism. One or more enzyme systems which catalyze the synthesis and hydrolysis of cholesterol esters have been reported to occur in various tissues such as liver, pancreas, intestines, and blood. A rather high level of activity has been associated with the pancreas and pancreatic juice. It is understandable, in light of these reports, why this enzyme has been related to the absorption process. Although normally only free cholesterol is ingested,

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two-thirds appears as ester in the thoracic duct lymph and in the blood serum and plasma. There is considerable evidence that cholesterol is esterified during absorption and that this esterification is an essential step in absorption. Two other factors in support of esterification are the requirement of bile salts and the simultaneous absorption of fat or fatty acids for efficient absorption of cholesterol. Without bile salts and the stimulatory effect of fats, there is little or no absorption of ingested cholesterol.

In this laboratory, Treadwell and co-workers developed a suitable substrate mixture for studying cholesterol esterase activity. Extracts of commercial pancreatin, serum, intestines, liver, and pancreas were shown to possess both synthetic and hydrolytic activity. All extracts showed a pH optimum of 6.6 and 6.2 for hydrolysis and synthesis, respectively. Fresh hog pancreas was found to contain the most active cholesterol esterase system. Experiments on 95 per cent depancreatized rats indicated that the pancreas was the major or sole source of the enzyme found in the intestinal mucosa. Other reports indicated that the role of bile salts is not just one of stabilizing the emulsions used.

Swell and co-workers made an extensive investigation concerning the role of bile salts in cholesterol esterase activity using hog pancreas. Sodium taurocholate and cholic acid were found to be the most active of the bile salts studied and a decreasing order of activity was evidenced with bile salts having 3, 2, and 1 hydroxyl group, respectively. Sodium dehydrocholate, with no hydroxyl group, was inactive either in synthesis or hydrolysis. The data also indicated that optimum activity results when cholesterol and bile salts are in a ratio of 1:1. The *in vivo* observations correlated with the previous *in vitro* investigations and it was suggested that bile salts are necessary for cholesterol absorption because of their relationship to cholesterol esterase activity.

Chaikoff, using C_{14} labeled cholesterol and epicholesterol, observed that cholesterol is absorbed at more than twice the rate of its stereoisomer and that while 50 per cent of the absorbed cholesterol recovered in the lymph was esterified none of the epicholesterol was so bound. The fact that none of the epicholesterol recovered in the lymph was esterified indicated that the esterification may be responsible for the difference in the rates of absorption of cholesterol and epicholesterol.

Recently it has been shown by Swell, Chaikoff, and Peterson that unabsorbable sterols, such as soy bean sterols, markedly decrease the absorption of cholesterol. However, because exceedingly large amounts of these unabsorbable sterols are required, this approach to the prevention of cholesterol absorption is impractical.

In this laboratory, specificity studies involving pancreatic cholesterol esterase have shown that the enzyme is less active in systems containing branched-chain fatty acids. Indeed, some branched-chain esters of

cholesterol were essentially not cleaved by the enzyme and little, if any, esterification could be detected when branched-chain fatty acids containing from four to eight carbon atoms were employed.

The experiments described in this thesis were undertaken to determine if branched-chain cholesterol esters, branched-chain fatty acids, or other cholesterol derivatives could effectively inhibit the hydrolytic and synthetic action of pancreatic cholesterol esterase, competitively or otherwise. If this could be accomplished *in vitro*, the possibility existed that a similar action *in vivo* could prevent or decrease the absorption of cholesterol.

Slight modifications of the substrate mixtures previously devised in this laboratory for studying the synthetic and hydrolytic action of cholesterol esterase enabled us to undertake kinetic and inhibition studies. The modified substrate mixtures showed that pancreatic cholesterol esterase is capable of rapidly hydrolyzing and synthesizing cholesterol esters. Over 70 per cent hydrolysis of cholesterol n-butyrate was observed in 10 minutes while cholesterol oleate was synthesized to as much as 80 per cent in 2 or 3 hours. This was the first time that such a rapid enzymatic synthesis and hydrolysis of fat-like compounds has been reported.

Three branched-chain cholesterol esters, namely cholesterol diethylacetate, cholesterol trimethylacetate, and cholesterol *a*-ethyl-n-caproate were shown to inhibit the hydrolysis of cholesterol n-butyrate *in vitro*. Extensive studies with the first two have shown that this inhibition is competitive in nature. These same compounds were shown to have no effect on either the synthesis or hydrolysis of cholesterol oleate. A branched-chain fatty acid, *a*-ethyl-n-caproic acid, was observed to inhibit competitively the synthesis of cholesterol oleate. This acid did not effect either the hydrolysis of cholesterol n-butyrate or cholesterol oleate *in vitro*. It was suggested that two distinct enzyme systems exist in hog pancreas, one acting on short chain cholesterol esters and one acting on long chain cholesterol esters, although summation experiments involving mixtures of cholesterol n-butyrate and cholesterol oleate did not conclusively prove this point. It was felt that if only one enzyme was present which catalyzed the synthesis and hydrolysis of both short and long chain cholesterol esters, inhibition should be observed in both hydrolytic systems.

The evaluation of the kinetic constants, under the conditions employed, has shown that K_s or the dissociation constant of the cholesterol n-butyrate-enzyme complex (ES) is approximately 10^{-4} while the dissociation constant of the enzyme inhibitor complexes, K_i , (enzyme-cholesterol diethylacetate and enzyme-cholesterol trimethylacetate) is approximately 10^{-6} . This is taken to show that the enzyme and inhibitor have a greater affinity for each other than the enzyme and substrate.

Dissociation constants of similar magnitude were observed with the cholesterol esterase synthetic system. Namely, K_s of the enzyme-substrate complex was 10^{-4} whereas K_i was 10^{-5} .

In vivo experiments were carried out to determine if any of the *in vitro* inhibitors could effectively decrease the absorption of dietary cholesterol. The absorption was followed by analysis of the blood for free and total cholesterol according to the procedure of Sperry and Webb. None of the compounds tested prevented absorption or lowered the blood cholesterol levels in rats on a 1 per cent cholesterol diet to a greater extent than free soy sterols (which has recently been shown to be an effective agent). On the contrary, *a*-ethyl-*n*-caproic acid had a synergistic effect. It was found that rats receiving this acid together with cholesterol in the diet exhibited a marked elevation of the blood cholesterol levels when the acid was present in a concentration of 5 per cent in the diet. A surprising observation was that, although the blood cholesterol levels were almost twice the levels when compared to the pair-fed control group, the liver cholesterol levels were almost halved when compared to the control group. It is felt that further studies with this branched-chain fatty acid are advisable.

When cholesterol *n*-butyrate was substituted for cholesterol in the diet, there appeared to be no difference in the cholesterol levels of the blood or livers of these animals when compared to animals on a cholesterol diet alone. The addition of cholesterol trimethylacetate, an *in vitro* inhibitor of cholesterol *n*-butyrate hydrolysis, did not alter the blood or liver picture.

It is concluded that the primary reaction in the absorption of cholesterol from the intestines is an esterification reaction.

THE EFFECTS AND LIMITS OF TAX DISPARITY

by CHARLES TODD STEWART, JR.*

This study investigated the extent of tax autonomy possible for politically independent states. Since the effects of tax disparity can be reduced or prevented by government measures interfering with normal international economic relations, information first was sought on customs unions, whose members avoid some of the obstacles to free international play of economic forces. Examination of the literature in this field revealed not only many opinions on the need for partial or complete elimination of tax disparities, not all in agreement, but revealed also a paucity of analytical inquiry. The literature on Benelux and the proposed Franco-Italian customs union offers explicit opinions on the permissible degree of tax and other disparities, some of the opinions contradicting others. The experience of Benelux does not provide usable data because of the persistence of non-tax barriers and of important disparities in other policies. The Schuman Plan has given rise to a controversy on the method of taxing steel exports, with Germany pressing for taxation in the country of origin and France in the country of destination. Future experience on the effects of tax disparities on international trade in steel between Schuman Plan nations may prove of value, once allowance is made for differences in the cost of steel in the several countries involved.

Federal unions offer more abundant empirical data than customs unions and have also the advantage that they minimize disparities in internal non-tax policies and in economic barriers between states which block or distort the effect of tax disparities. The major part of the study is devoted to data and literature on disparities within federal unions, and especially in the United States.

Tax rate parity is defined as a relation between tax rates resulting in no net inter-tax area repercussions. This definition is shown to mean approximate equality of rates for commodity taxes, since the taxpayer can buy across a tax border without altering his income and without changing his way of living and scale of preferences. Income tax parity, on the other hand, need not mean equality of rates. It is difficult to find a common base and to compare complex methods of tax determination. More important, to avoid an income tax most taxpayers must change residence, consequently altering their situation and very probably their income. Only between tax areas which are in other respects very homogeneous is it possible to regard tax rate equality as approximately the same thing as tax rate parity.

Disparity of commodity taxes can be considered apart from govern-

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ment expenditures because the measures used to avoid the tax, namely, shift of purchases across the tax border, do not involve loss of a major part of the benefits of government expenditure. To avoid an income tax, on the other hand, it is usually necessary to change residence to another tax area, entailing loss of most of the benefits of government expenditures not only of income tax revenues but of other revenues as well.

The economic limits to taxation are reached whenever any further increase in tax rates reduces total tax revenue or, alternatively, causes a shrinkage in the tax base. Since these results depend both on tax disparity and on the absolute level of taxation (as well as on expenditures and other government policies), in practice it may be difficult or impossible to distinguish the income effects of absolute levels of taxation from the spatial substitution effects of tax disparities. Political consequences of taxation, or moral limits to tax compliance, both influenced by tax disparity between adjacent tax areas, may set limits to disparity short of those imposed by its economic effects.

Disparity is considered separately for commodity taxes, personal income taxes, and business taxes because there are significant differences between these three groups in method of tax avoidance and in ease of tax avoidance.

Sales taxes, giving rise to less intercommodity substitution than excise taxes (which are usually levied at higher rates and on a quite limited range of goods), are well suited for the study of tax disparity. A survey of investigations on this subject led to the conclusion that precise measurement of the effects of tax disparity has not been achieved because of the following difficulties: (1) varying degrees of consumer awareness of the tax, and of tax differentials; (2) varying degrees of tax absorption and shifting, and of consumer awareness of the extent to which he pays the tax; (3) differences between the initial effect of tax disparities and the ultimate effect once buyers and sellers have become accustomed to the disparities.

The unit relevant for study of the effects and limits of commodity tax disparity proved to be an economic and not a political one. In the United States a retail sales tax differential of 3 per cent and even of 2 per cent was found generally to have noticeable effect in shifting sales across the tax border. But this effect was limited essentially to adjacent border trading areas and concentrated on certain types of stores and purchases; it was besides an impact effect which diminished with habituation to the tax. The retail trading area in the United States varies with the type of goods from a few blocks to not much over twenty miles in radius. There is no reason to believe that it is larger in other countries and there is good reason to believe that in most countries it is considerably smaller. Migration of sales between border trading areas is usually of

no economic significance to the tax area as a whole, but the loss of income in the border trading area may have political effects out of all proportion to the economic effect on the entire tax area or even on the border trading area itself.

Much higher tax rate disparities on specific commodities would be necessary to have the same effect as a 2 per cent retail sales tax on sales migration and on income loss to border trading areas. A higher differential is necessary because of the lesser importance of a single commodity in the budget, and because of consumer practices of combining shopping trips for many purchases. The elements of quality, of consumer preferences, of product differentiation, by limiting the importance of the price criterion alone, and by destroying the assumption of identical prices for the product everywhere, also reduce the tendency to make a special trip to save on the tax. The automobile is an exception because of its mobility, its large unit price, and its identical price less tax on opposite sides of many tax borders.

The limits to a retail commodity tax disparity increase more than proportionately with the number of retail trading areas which must be leapfrogged to save on the tax. The increased travel time uses progressively more valuable amounts of leisure and eventually encroaches on work time and work income.

Wholesale trading areas vary much more in size than retail trading areas. A given wholesale sales tax disparity affects sales in a larger geographic area than does the same disparity in retail sales tax. For standardized items the size of the wholesale trading area can be approximated in terms of time and transport costs, which are objective items increasing with linear distance, unlike time and transport costs of retail buyers, which include many subjective valuations and which often are not calculated at all. The effects of tax disparity are smaller for unstandardized commodities, even though the trading areas tend to be larger, for the price is not the sole consideration and product differentiation makes monetary comparisons difficult and inadequate.

The literature on the effects of personal income tax disparities shows considerable agreement on its importance but is either general in its comments or is restricted to specific instances. The only explicit estimate of the degree of disparity which will have an appreciable effect is made by Kendrick; he considers 6 per cent to be the limit of disparity within the United States.

A brief study of the motivations of migrants and the incentives to migration reveals that non-economic motives and incentives are usually very important and often dominant so that it is not possible to seek any causal relation between disparities in income tax and data on migration; besides, most migrants until recently were not subject to income taxes in their homelands. Insofar as migration is the result of economic motives

and incentives, differences in prospective incomes and opportunities for employment are of greater significance than tax differences. Because of geographical differences in wage structure, and in employment opportunities for the same occupation, there are often streams of migration in opposite directions: skilled and professional workers going one way and unskilled going the other. The existence of substantial disparities in wages for the same work, and in ratios of wages for different occupations within the United States, a homogeneous area with no barriers to migration, emphasize the spatial and occupational immobility of labor and accordingly the limited effect of an income tax disparity.

The limits of the area of daily commutation are essentially the same as those of the retail area. Since the tax areas on which income taxes are levied are usually much larger than the retail trade area, there is little possibility of changing area of tax liability by changing residence without also changing jobs. Beyond the area of daily commutation the main costs of changing residence are social rather than economic, e. g., less frequent contact with family, friends, and community. These social costs are only vaguely connected with linear distance and are becoming less and less important in the United States due to better facilities for travel and communication and to changes in the social and family structure.

Only those whose income is independent of their area of residence (mainly those receiving non-wage incomes) can consider the advantages of changing tax areas of residence exclusively in terms of differential taxes; and even these will only seriously consider a move if the tax saving is substantial—certainly much more than the 2 or 3 per cent of purchases which in the case of retail sales taxes begin to cause some migration of sales. Since there are no barriers to interstate migration in the United States, the lack of significant migration to avoid taxes, and the limitation of such as has occurred to those who do not currently work for their income and to a few in very high tax brackets, indicate that income tax differentials between states are well within tolerable limits. Within the United States the non-economic deterrents to migration are at a minimum. Income tax differentials necessary to induce migration between nations can safely be expected to be substantially higher than within the United States.

To avoid a business income or property tax, it is usually necessary to change the location of business or industrial activity, thus altering the relations to markets and supplies and quite likely materially affecting the firm's net income. The learned literature on the subject is in general agreement that tax differentials are unimportant in inducing relocation of firms but may be of some consequence in the choice of location of new firms. Again the only one to make a specific estimate is Kendrick, who considers a disparity of 5 per cent of net income as the limit permissible on business and industry within the United States. Tax

exemptions and concessions are not believed to have much effect in relocating or attracting industry except possibly for firms already considering a new site on other grounds.

The extreme difficulty of measuring tax disparities on corporations is only in part attributable to complexities of the tax itself. Corporate taxpayers differ greatly in their asset structures and in the relation of their various tax burdens to one another and to other costs. Measurement of the effects of tax disparity is equally difficult; it is necessary to separate the growth (or decline) of business and industry in given tax areas and migration between tax areas which would have occurred in any case from that migration which is the consequence of tax disparity. Empirical measures of industrial growth and their correlation to tax burdens provide no conclusive evidence for these reasons and for the further reason that to some extent it is the growth of industry that leads to a rise in taxation, and not low taxation that leads to industrial growth. No over-all comparison between tax areas is possible for firms whose property taxes are important, since property taxes levied on site value vary greatly within a tax area. Surveys of reasons given for location and relocation of firms in the United States and Canada show that tax differentials have been unimportant considerations.

The great majority of firms serve local markets and face local competitors and are therefore little affected by tax differentials. The larger a firm's market, the more likely that the firm is affected by tax differentials and the greater its freedom in choice of location relative to markets. On the other hand, insofar as non-market factors are important in location, such a firm may be more influenced by tax disparities on its supplies than on its sales or net income.

The drawbacks to relocation of business and industry in the United States and therefore the limits to interstate tax disparity are unquestionably smaller than those between nations, particularly when allowance is made for the compensations which firms receive for their taxes in the form of government services.

Over-all effects and limits of disparity in tax systems cannot be expressed in terms of disparities in general levels of taxation alone because of wide differences in the effects and limits of disparity of specific taxes. Even identical tax structures do not lead to identical tax levels or burdens because of differences in economic structure between countries. Furthermore, effects and limits of disparity in tax levels are not exhausted by consideration of the migration of tax objects. The effects of taxation as a whole, unlike those of specific taxes, cannot be abstracted from the rest of the economy, and specifically not from the expenditure of tax revenues. The effects and limits of tax system disparity are measured in the balance of payments.

Some government expenditures are subsidies on goods; if there are

no restrictions on the sale of the goods, the subsidies are negative taxes whose disparities lead to migration of sales. Benefits conferred on persons or businesses are like income taxes; to take advantage of disparities it is necessary in most cases to change tax areas of residence. Because taxes paid and benefits received are not valued on the same subjective scale, benefits being generally undervalued relative to taxes, the absolute level of taxation and expenditures affects the burden of taxation and the tendency to emigrate. This effect is not believed to be important. No evidence and no opinion has been found that disparities in the general level of taxation, or in the government services to persons, are of great importance for migration pressure.

In addition to their effects on inter-tax area migration of sales, of persons, and of firms, taxation and expenditure affect also the absolute level of supply in each tax area and thereby the balance of payments. Some expenditures will have a positive effect on productivity; but transfer payments, free provision of goods and services, and more broadly the redistributive effect of the tax and expenditure system may reduce work effort and demand for work. The negative effects of taxation on investment may be more than counteracted by the positive effects of expenditures. The influence of taxation on the number of workers, the hours of work, and work effort are uncertain. The literature on this point is inconclusive. To ascertain the impact of the tax and expenditure system on the balance of payments, detailed knowledge is necessary on the level and redistribution of demand and supply in a country as a result of its fiscal system.

Writers on customs and economic unions affirm repeatedly that equilibrium in the balance of payments is a prerequisite of union and a condition for its success. But the balance of payments shows more than the effects of tax and expenditures policies; it reflects significantly other policies, primarily monetary ones, which materially influence relative prices and incomes. Equilibrium requires either such coordination of monetary policies as is needed to avoid disparities in inflationary pressures in member countries, or such divergences as are necessary to counteract the effects on the balance of payments of disparities from other causes.

Although tariff and other barriers to international economic relations are a condition of national autonomy in government economic policy, tax structure autonomy is not dependent on such barriers as long as the tax disparity is moderate. Very large disparities of personal and business taxes, uncompensated by corresponding disparities in government benefits received by the taxpayer, would be necessary to induce appreciable migration by individuals and firms. For individuals if not for firms, high tax countries are usually also high income countries. Since fiscal policy in European countries has evolved under common historical influ-

ences, the growth of government functions and services has been parallel, as has the development of the tax systems. Major differences in tax structures of European nations are presumably only a lag of some behind others, and there is hope that the gap will diminish quickly. Even at present there seems no reason to believe that differential taxation of individuals and businesses would result in appreciable migration in the absence of obstacles. In spite of cheap and highly developed transport in Europe, of dense population, and of the small area of some countries, retail sales and excise tax differences would not result in diversion of trade in the absence of barriers to trade except in retail trade areas adjacent to the border. There is no evidence that even in the smallest European countries such diversion would have economic importance. Differences in commodity tax burdens on wholesalers or producers, however, would have some effect in the absence of trade barriers. It seems likely that only standardized commodities such as coal, iron, ore, cereals, petroleum products, construction materials would be greatly affected by tax differentials at the wholesale level. For many of these, transportation costs bulk so large that major redirection of trade is out of the question.

It may be concluded that tax rate and structure disparities are not a serious barrier to customs union and free trade in Europe, and no barrier at all to trade liberalization. In other parts of the world they should be even less important obstacles. Nor do tax structure and rate disparities resulting from the finance of a joint international expenditure (such as defense) impose practical limits on the level of the expenditure, or set narrow bounds on the manner of its allocation to participant nations.

To form a customs union, or to initiate free trade, or even to liberalize trade greatly, countries faced with a deterioration in their balance of trade would have to adjust their general economic policies to reduce the payments gap to manageable size. Likewise, the scope of a joint international defense effort, and the distribution of its burden, are limited by their pressure on the balances of payments of the participant countries, whether the defense burden is financed by taxation or by other means.

What barriers to international trade make possible then is not disparity of tax rates and tax structures, or even of tax levels, but autonomy of government economic policies, specifically monetary and price policies, investment and employment policies, welfare and defense policies. It is not migration of trade, capital, or persons in consequence of tax disparity which limit national autonomy in tax policy; rather, it is disequilibrium in the balance of payments that restricts autonomy of national fiscal and economic policy as a whole, leaving within this broad limitation still wide scope for independent tax policies.

THE STERIC SPECIFICITY OF LIVER ESTERASE AND PANCREATIC LIPASE

by TZE-TUNG TANG*

The steric specificity of liver esterase and pancreatic lipase toward racemic esters was first observed by Dakin in 1903. This phenomenon was not fully investigated until, about twenty years later, Willstätter and his pupils began a more detailed study of esterases and lipases from different sources, and concluded that the steric specificity of these enzymes varied under different conditions, such as the type and concentration of substrate, the presence of foreign substances, and the pretreatment of the enzymes. The importance of the study of the steric specificity of esterases and lipases is to shed some light on the mechanisms of ester hydrolysis, to help identify and classify the enzymes involved, and possibly to develop a biochemical method for the resolution of racemic acids and alcohols.

Most of the esters used by Willstätter and co-workers were aromatic in nature. Since the aliphatic esters are normally found in living organisms, it seemed more reasonable to study these enzymes through their activities on aliphatic compounds. About twenty-two different esters consisting of alkyl and alicyclic alcohols and fatty acids were then prepared, and employed for the study of both steric specificity and rate of hydrolytic action of hog liver esterase, hog pancreatic lipase, and castor bean lipase. The preparations of the animal tissue powder and plant tissue powder were described. The I.U.C. rules for nomenclature were observed in naming these synthetic esters in order to avoid any possible confusion from the usage of conventional names.

An enzyme digestion procedure was developed after determining the effects of various types and concentrations of buffers and activators. One-tenth mole borax-boric acid buffer (pH 8.92) was found superior to phosphate, borax, barbital sodium, and tris(hydroxymethyl)aminomethane buffers. Sodium taurocholate was found indispensable for activation of both liver esterase and pancreatic lipase, but not Ricinus lipase which it inhibited. The optimum concentration of sodium taurocholate relative to the animal tissue powder was 1:1 by weight. Different metal ions, such as Ca^{++} , Ba^{++} , and Mg^{++} , and albumin were tested for their activating capacity. It was found that they did not appreciably activate pancreatic lipase as previously reported.

The end-products were recovered from the enzyme digests in average yields of 88 per cent for the esters and alcohols, and 82 per cent for the acids. Their specific optical rotations were determined and compared with their original ones before digestion. A comparative study on the

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rates of hydrolysis of different esters by liver esterase and pancreatic lipase was also carried out.

From the data of all these experiments, some general conclusions have been drawn as follows:

1. An asymmetric center near the ester linkage is necessary for the demonstration of steric specificity of liver esterase and pancreatic lipase.
 2. An increase in the size or number of side chains at the asymmetric center appears to enhance the degree of steric specificity of pancreatic lipase, but not that of liver esterase.
 3. An increase in the size or number of side chains at the asymmetric center decreases the rate of hydrolysis of the enzymes.
 4. An increase in the size or number of side chains at the asymmetric center on the alcohol side of the ester bond hinders the activity of liver esterase more than pancreatic lipase. On the other hand, this same steric effect occurring on the acid side of the ester bond hinders the activity of pancreatic lipase more than liver esterase.
 5. Both liver esterase and pancreatic lipase generally hydrolyze (—) alcohol esters faster than (+) alcohol esters, and (+) acid esters faster than (—) acid esters, when the substrates are a racemic mixture or a diastereoisomeric pair.
 6. Liver esterase hydrolyzes (+) alcohol esters faster than (—) alcohol esters, when the substrate is a single optical form. However, pancreatic lipase does not show any change in its behavior toward substrate in a single optical form or in a mixture of optical forms.
 7. In hydrolyzing (+,—)1-methylheptyl 2,2-dimethylpropanoate, liver esterase prefers (+) ester to (—) ester. This exceptional case cannot be explained at present.
 8. Pancreatic lipase shows a much higher steric specificity toward menthyl esters than liver esterase.
 9. The highest steric specificity has been shown by pancreatic lipase toward (—) menthyl (+,—)2-methylbutanoate. The (+) acid ester was hydrolyzed almost seven times as fast as (—) acid ester.
 10. The lowest steric specificity has been shown by pancreatic lipase toward (+,—)1-methylheptyl octanoate. Both of the diastereoisomers were hydrolyzed at an almost equal rate by the enzyme.
 11. Pancreatic lipase splits the diastereoisomers in the following order: (—)alcohol-(+)acid > (—)alcohol-(—)acid or (+)alcohol-(+)acid > (+)alcohol-(—)acid. This order is not observed in hydrolysis by liver esterase.
- The mechanism of esterase and lipase has been discussed. It is suggested that the enzyme has to be in close contact with the carbonyl carbon and the ethereal oxygen, and juxtaposed rather exactly with the

adjacent groups around the ester linkage at the same time before hydrolysis can occur. A certain limitation of free rotation would be imposed upon the ester linkage and the linkages nearby under these conditions.

From the observations of this study, it may be suggested that pancreatic lipase and liver esterase are different in some aspects of the spatial configuration about their active sites. It is also possible that pancreatic lipase and pancreatic cholesterol esterase are actually a single enzyme. A comparable situation may also be true for liver esterase and liver cholesterol esterase.

Ricinus lipase preferred (+) acid esters to (-) acid esters just as liver esterase and pancreatic lipase generally did. However, it required entirely different conditions for activity and was very slow in hydrolyzing the synthetic esters prepared in this study.

Both liver esterase and pancreatic lipase exhibited only a relative specificity toward the esters, and no absolute specificity was observed. Through the partial resolution of (-) menthyl (+,-) 2-methylbutanoate by pancreatic lipase, the (+) 2-methylbutanoic acid was concentrated as high as 86.9 per cent; through that of (+,-) menthyl pentanoate, the (-) menthol was concentrated as high as 80.9 per cent; and through that of (+,-) 1-methylheptyl hexanoate, (-) 1-methylheptanol-1 was concentrated as high as 74.8 per cent.

INVESTIGATION OF SOME PHYSIOLOGICAL ASPECTS OF NITROGEN MUSTARD

by EBERHARD GEORG TRAMS*

Some physiological aspects of parenterally administered methyl-bis (beta-chloroethyl) amine—hereafter referred to as HN_2^{\dagger} —were studied. The effect of parenterally injected nitrogen mustard on the permeability of the capillary bed was studied by means of the intra-arterial injection of thorotrast following the administration of HN_2 by various routes. Radiographic analysis of the amount of thorotrast stored within the perivascular lymphatics and within the regional lymph nodes was found a suitable method of demonstrating vascular permeability changes induced by HN_2 . Capillary permeability in dogs was increased following the administration of 0.3 to 0.5 mg/kg of HN_2 either by the subcutaneous, intravenous, or intra-arterial route. No changes were noted in dogs receiving thorotrast alone. The most marked changes were noted in areas where the concentration of HN_2 , presumably was high. Radiographic and histologic studies indicated that capillary permeability was most increased following the intra-arterial administration of HN_2 . These findings were supported by a series of investigations on the lymphatic uptake of C^{14} -methyl labeled HN_2 after intravenous or intra-arterial injection of the drug. Thirty to sixty minutes following the administration of isotopically labeled HN_2 the specific activity of thoracic duct lymph reached a maximum. At this time the amount of radioactivity assayed in the lymph was twice as high as the radioactivity in blood samples. Experiments in rats whose thoracic duct was cannulated showed that thirty to sixty minutes after the injection of C^{14} - HN_2 radioactivity in the lymph of intra-arterially injected animals was three to four times as active as that of intravenously injected rats. Following the intravenous injection of isotopic HN_2 into rats 15 per cent of the total injected radioactivity was drained from the thoracic duct within 20 hours while close to 30 per cent of the total injected activity was excreted into bile drained from the common duct of these animals.

While bile drained from the common duct of HN_2 injected animals was found non-toxic as determined by tissue culture assay, some correlation was found between maximum radioactivity and maximum cytotoxicity in thoracic duct lymph samples. This was demonstrated by comparing the amount of HN_2 contained in lymph or bile—calculated on the basis of the radioactivity contained in the samples—to the amount of damage produced in tissue culture. Only moderate damage to heart

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[†] Frequently written HN_2 .

fibroblasts grown in tissue culture was observed with lymph containing amounts of radioactivity corresponding to from ten to twenty times the cytotoxic dose of HN_2 . Assay of the radioactivity contained in lymph by means of filter paper electrophoresis indicated that the radioactivity in these samples was strongly protein bound. In the following the value of the C^{14} -methyl group as a tracer for HN_2 in biological systems was investigated. Studies were undertaken in order to determine whether or not the isotopic methyl group of HN_2 was detached from the parent compound during intermediary metabolism. Since the possibility existed that the isotopic methyl group of HN_2 acted as a methyl donor *in vivo* and took part in transmethylation, choline, creatin, and the S-methyl group of methionine were isolated from rat liver after the animals had been injected intravenously with C^{14} - HN_2 . Although choline isolated from these livers contained as much as 0.4 per cent of the total injected radioactivity the activity isolated with creatin or methionine did not exceed 0.001 per cent of the total injected radioactivity. Upon calculation of the overall incorporation of radiocarbon as methyl radical into these compounds it was found that probably not more than 5 per cent of the total injected radioactivity was detached from the parent compound during intermediary metabolism. Urinary excretion of radioactivity was found to exceed 40 per cent of the total injected dose in rats following the intravenous injection of 1.0 mg/kg HN_2 .

Rats receiving one half or one fourth of this dose excreted 30 and 27 per cent respectively of the total injected radioactivity. Chromatographic analysis of the urinary radioactivity indicated that urinary metabolites of HN_2 are similar in structure to end products of H_2N in aged aqueous solutions. It has been suggested that one of the urinary metabolites of HN_2 is a conjugated form of methyldiethanol amine. It was concluded that HN_2 increased capillary permeability after parenteral injection. Lymphatic uptake of the drug is highest after intra-arterial administration. C^{14} -methyl labeled HN_2 may serve as a valuable isotopic compound in the study of nitrogen mustard metabolism.

SUMMARIES OF DISSERTATIONS
SUBMITTED FOR
THE DEGREE OF DOCTOR OF
JURIDICAL SCIENCE

THE EVOLUTION OF THE COURT-MARTIAL SYSTEM AND THE ROLE OF THE UNITED STATES COURT OF MILITARY APPEALS IN MILITARY LAW

by FRANK FEDELE*

The creation of the United States Court of Military Appeals represents the most outstanding innovation in the field of military law brought about by the enactment of the Uniform Code of Military Justice which became effective on May 31, 1951, in that it marks the introduction of an entirely new concept to the court-martial system—that of placing part of the administration of military justice in the control of civilian judges who are independent of the Department of Defense. The purpose of this study is two-fold: first, to trace the evolutionary development of the court-martial system to the birth of this civilian "supreme court" for the review of military convictions; and, second, to examine, analyze, and evaluate the role played by this youngest federal statutory Court in the first twenty-eight months of its nascent existence and to appraise its effects on military law.

Military Law, in contradistinction to Military Government, Martial Law, and Law of War, comprises those rules and regulations which govern military discipline and the government of persons employed in military service. Although the basis for our court-martial system is found in Article I, Section 8, of the Constitution of the United States, its history is much older. Our military law derives its origin ultimately from the Greek and Roman Empires, but more immediately from Western European procedures, as developed in England and on the continent. As a consequence, American military law today manifests many striking features of the civil law as distinguished from the Anglo-American common law.

The court-martial—the principal military tribunal for the administration of military law—having been transplanted to this country from England by the Continental Congress prior to our Revolution as an emergency expedience, has remained with us in its basic form all these years. Since the Constitutional basis for military tribunals is found in the power to constitute inferior tribunals (Article I, Section 8, clause 9), it has been long settled that a court-martial is not a part of the federal judiciary within Article III, but is rather an instrumentality of the executive power. Therefore, it has been the traditional view of the military that a court-martial is primarily an instrument for the maintenance of dis-

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cipline. Since discipline is a function of command, it is only natural that the court-martial has developed historically as an extension of the authority of the commander. This basic concept is reflected in all our military codes, remains unchanged to this day, and accounts for the differences which exist between our military justice system and our civilian criminal judicial system.

While both the form and substance of the military court-martial system have generally been the subject of a slow, gradual, and almost imperceptible change throughout the years, there are certain ingrained fundamental features differing radically from our civilian criminal jurisprudence which still remain unchanged. Although in many instances the military accused is afforded the same safeguards as his civilian brother and in some respects is accorded even greater protection, the following differences are most apparent. The court-martial is a temporary tribunal, not a court of record, with non-territorial jurisdiction, created and dissolved at will by military commanders who have the power to change the membership of the court during the trial without affecting the legality of the proceedings; the grand jury indictment is substituted by a pre-trial investigation; the trial is a modified judge and jury system with the law officer (judge) deciding all questions of law except that court-members (jury) decide all challenges for cause, motions for a finding of not guilty, and questions involving the accused's sanity; the court has the power to call and examine witnesses; in special and summary courts there is no right that the trial be conducted by lawyers; "due process" means trial in accordance with military law; deposition testimony may be used against the accused notwithstanding lack of confrontation; accused has no right to bail, a bill of particulars, or to make a motion for a mistrial or to change the venue; whereas jeopardy attaches upon arraignment in civilian life, jeopardy in the military does not attach until trial is complete and the sentence is approved by the highest military authority provided for in the military appellate review system; immunity from unlawful search and seizure is not as extensive as in civilian life in view of the "military search" rule; the court-members vote on the sentence as well as the findings, and less than a unanimous vote governs in all cases except where death is mandatory; the sentence, not being self-executing, is inchoate until approved by superior military authority and in this sense is no more than a recommendation; the accused has no right to poll the court; the conviction may, depending upon the punishment, be subject to at least two automatic reviews with the right to petition the United States Court of Military Appeals in certain cases; the accused's right to collaterally attack the conviction by habeas corpus is limited to matters of jurisdiction only.

That courts-martial are criminal courts, performing a strictly judicial function in enforcing a penal code, in passing upon the most sacred of

human rights, and in applying highly punitive sanctions, is clear beyond peradventure. Consequently, opposed to the traditional military view is the concept that a court-martial is a court of law and as such its primary function is to judicially administer the criminal law military, uncontrolled by the power of the military.

"Command Control", the unseen power and influence exercised by military commanders over the personnel administering military justice, is directly related to the manner in which courts-martial are constituted and is thus an inseparable concomitant of the traditional military view of the supremacy of military commanders in courts-martial; and, being the focal evil in military justice, forms the crux of the court-martial controversy.

Congress, being fully cognizant of this greatest evil which presented a most troublesome question, failed to cure the cause and instead compromised the conflicting views regarding the proper functions of a court-martial by adding certain safeguards not found in the earlier codes. To overcome the criticism that all appellate review was controlled solely by the military, the Uniform Code created the United States Court of Military Appeals with power to conduct the last phase of the appellate procedure. While the Court is the product of a reform movement and owes its existence to a legislative compromise of the court-martial controversy over "command control" and was intended to balance the two opposing theories of military justice—the *discipline* element and the *justice* element—its creation was the product of evolution and its roots lie in the historical development of the court-martial system. This history is marked by a bitter struggle between military commanders and interested civilians as to the primary function of the court-martial—a conflict which reached its greatest height when large citizen armies in two World Wars brought millions of Americans, among whom were many lawyers, into personal contact with the court-martial system.

Early in its judicial life, the Court was quick to recognize and declare that the Congressional intent in enacting the Uniform Code was to place military justice, insofar as reasonably possible, on the same plane as civilian justice and to free the accused "from certain vices which infested the old system." Whether the Court has fulfilled this mission is one of the studies under consideration herein.

It appears that the Court, much like the architect, had at the very inception formulated a legal blueprint which has served as a pattern for the building up of the common law military. Accordingly, its decisions have been promulgated in series, each one of which touching upon a different facet of military law. As each phase is developed, it moves on to another. This scheme is not only evident from the decided cases, but is perhaps more strikingly manifested in the exercise

of the Court's prerogative in granting or denying petitions for grant of review.

Consequently, the first series of cases indicates a calculated effort to lay a strong foundation for the further development of the military legal edifice by dealing with the jurisdictional limitations of its own appellate review powers, the necessity for prejudicial error, the effect of a guilty plea, military due process, and the legal status of the Manual for Courts-Martial.

Unfortunately, the legal foundation thus laid, being the product of a divided Court on practically every major issue, is not too firmly bottomed. The Court's initial decision, the convulsive *McCrary* case, resulted in a three way split on its own appellate review power which has caused the greatest dissension in the Court. While Judge Latimer advocates the "some evidence" rule and Chief Judge Quinn urges the "substantial evidence" rule, Judge Brosman not only manages to apply both with little difficulty but has blended the two into what he calls the "some substantial evidence" rule.

What constitutes "material prejudice" has likewise been the cause of a bitter dispute among the judges with a morass of resulting confusion, uncertainty, and inconsistency. Three standards for testing prejudice have been announced: the "impact theory", the doctrine of "military due process", and the doctrine of "general prejudice". The applicability of the compelling evidence rule as a saving device in each of these tests is still an open question. While there is unanimity of opinion that a guilty plea to the offense charge cures any prejudice, there is a split as to whether a judicial confession or whether a guilty plea to a lesser offense has the same effect.

An analysis of the limited cases employing the so-called doctrine of "military due process" leads to the inescapable conclusion that it is but a catch-phrase synonymous with "material prejudice" and is not comparable to constitutional due process. Its younger brother, "general prejudice," has been the cause of the second greatest schism in the Court. Fathered by Judge Brosman and supported by Chief Judge Quinn, the doctrine has been most vigorously opposed all the way by Judge Latimer as a doctrine "so incomprehensible and so lacking in identifiable standards" that it is calculated "to confuse and muddle the administration of military justice". The possibility of giving ex post facto effect to these doctrines and of curing their prejudicial effect by the process of "purgation" has only added more confusion to the already bewildered concepts which have not been favorably received or applied by the boards of review.

The innovation that a court-martial be given instructions has proved to be "an extremely important, but difficult, field of law", productive

of profuse controversy resulting in the development of the largest field of decisional law.

In bringing the military procedure closer to our civilian practice, Article 51(c) of the Uniform Code imposes the requirement that a general and special court be instructed "as to the elements of the offense" charged. Although paragraph 73 of the 1951 Manual authorizes additional instructions as a discretionary matter, there is no statutory mandate that the court be instructed on "the law of the case".

The early general reluctance on the part of the military to require more than a ritualistic compliance with the minimal instructional requirements on the one hand, and the concerted effort on the part of the Court to require compliance with not only the letter but the spirit of the code on the other hand, has resulted in a curious development of the instructional law with the Court generally taking the initiative and blazing the trail. While the Court in its earlier decisions indicated by the use of loose language that the code requires instructions on "the law of the case"; it is clear, from the subsequent development of the decisional law, that the Court has construed Article 51(c) as requiring mandatory instructions on matters which lie somewhere between the "elements of the offense" on one extreme and "the law of the case" on the other.

In building up the instructional structure the Court has derived the following minimal standards from Article 51(c) in the absence of any request by the defense:

1. The court must be instructed on the elements of the offense charged.
2. The instructions must be complete, clear, simple, and unambiguous.
3. The instructions must include a definition of such lesser included offenses as constitute, under the evidence, reasonable alternatives to the specific offense charged.
4. The instructions must include a statement of the law relative to certain affirmative defenses directly related to the elements of the offense where such defenses are properly raised by the evidence.

These general standards are not without fine refinements which for the most part have been peculiarly adapted to military law. For example, while the "mountain" and "molehill" rule was pronounced as the test for determining the prejudicial nature of erroneous alternative instructions, an exception was declared by a divided Court in the offense of murder. Further, when the Court was faced with the problem of whether "knowledge" under Articles 89, 90, and 91 is an essential element requiring instructions *sua sponte* or is a matter of affirmative defense which need not be instructed on unless the factual issue is reasonably raised by the evidence, a divided Court conceived a special

"either or" rule for these offenses only. This rule requires an instruction only when the factual issue of knowledge is raised by the evidence. While refusing to decide the issue presented, the Court, in effect, has thus treated "knowledge" as an affirmative defense without so holding. Finally, the hybrid rule requiring instructions as to only those affirmative defenses "directly related to the elements of the offense" has thus far been applied only to self-defense, insanity, and physical incapacity, and has been rejected in alibi, justifiable or excusable homicide, sickness, entrapment, mistake of fact, accident, and authority.

Although this represents the extent to which instructions on the elements are mandatory, the Court has nevertheless required instructions on certain matters other than elements of the offense even in the absence of a specific request. Thus, interlocutory factual questions determinative of guilt or innocence must be presented to the court with appropriate instructions. This rule has been applied to jurisdictional matters by the Court, and rejected by boards of review when applied to the legality of a search and seizure. In addition, where a deposition concerns two offenses—one capital and the other noncapital—both joined in one case, an instruction that the deposition is not to be considered as material to the capital offense is required. Finally, where the law officer undertakes to advise the court as to the maximum permissible punishment, whether pursuant to request or not, he must do so correctly.

All other instructions fall into the nonobligatory class, rest within the sound discretion of the law officer, and need not be given in the absence of a request. In this connection, defense counsel have "free rein" to submit requested instructions and the failure to grant the same is erroneous. This rule has been applied to the law of aider and abettor as principals, co-conspirators and co-actors, credibility of accomplices, reputation and character evidence, circumstantial evidence, presumptions, corroboration, and corpus delicti.

The building up of a body of instructional law has been paralleled by a simultaneous development of a series of peculiarly military curative devices unknown to our civilian practice and designed to offset the hard-felt burden of the instructional requirements. While it has been definitively declared that instructional deficiencies cannot be cured by proceedings in revision, reliance on legal knowledge of court-members, request for instructions by trial counsel, modest sentence, they can be cured by use of a certificate of correction, an instruction which imposes a higher standard of proof than was actually required, by construing instructions as a whole, by a plea of guilty to the offense in question, by approving a findings of guilty of a lesser included offense supported by the evidence, by the doctrine of waiver, and by the doctrine of "inclusive instructions". Whether a judicial confession is tanta-

mount to a guilty plea for purgation purposes, whether evidentiary sufficiency may be resorted to in rectifying an inadequate instruction, whether the doctrine of incorporation by reference can be utilized to save an instruction, and whether statements of counsel can be accepted as instructions, are all questions which, having been decided both ways, are not as yet fully settled.

Of recent development and productive of much criticism and doubt is the concept announced in the *Gibson* case that an instructional failure may be cured by the trial forum by its findings of guilty as to the lesser offense not instructed on. Finally, there is a present trend initiated by boards of review and not yet officially approved by the Court that the failure to instruct on value in larceny or robbery may be rendered harmless by inferring value from the nature and description of the property alleged.

Without questioning the desirability of the present status of the instructional military law, the evolutionary process has had one decidedly beneficial effect upon the administration of military justice. The original notion of giving minimal instructions has been replaced by the practice of providing complete, detailed, and full instructions which more often than not reaches the proportions of over-instructing.

Having been created in compromise, the task of the Court is herculean. Its activities will be subject to close scrutiny by its proponents and opponents alike. What pleases one group will of necessity displease the other.

Quantitatively, despite the heavy work load of the Court, it has been able to ultimately reach only an infinitesimal number of court-martial cases. Because of the disproportionately large number of certifications, the chances of an average accused having his case reviewed on petition are very slim. For the accused tried by special court, his chances of getting to the Court, in the absence of certification, are even less encouraging.

Qualitatively, the Court has passed upon a variety of legal issues and is not free from engaging in policy making or in rendering advisory opinions. Despite the proportionally high rate of disagreements in the Court—a divergence caused basically by different and shifting individual views concerning the Court's power to weigh the evidence and to judicially legislate, and by the clash between syllogistic and pragmatic logic—certain results, trends, policies, and needs are clearly discernible.

The Court's first objective—that of establishing a unified framework of principles of military criminal law—has been reasonably met. As final arbiter, it has resolved many differences of opinion of the various services. By taking the initiative, it has developed a body of law with higher standards of justice than heretofore known in military

law. Being a "free" Court, it has in large measure wisely adapted civilian standards to what is now an essentially civilian military service. Being a "practical" Court, it has chartered a pragmatic course designed to strike a happy balance between the two opposing elements of discipline and justice, and as a result has made much new law which is peculiarly military. As a consequence, the infallibility of the Manual for Courts-Martial as the "bible" of military law has been weakened; the Manual itself has been practically rewritten by means of rejecting, adding to, and modifying the provisions thereof. In this setting the need for truly qualified and trained military lawyers, for a military digest and citator systems, and for revision in the special court becomes most apparent. Military law has at long last come of age and has emerged as one of the highly specialized branches of our American law today.

The Court's second objective—to act as an effective check on inferior military courts and judicial agencies—has been partially met only. While the Court has been most liberal in favor of the accused on the issue of command control, the best system of review cannot correct errors that do not appear in the record and the chances that command control will appear in the record are remote. Any effective remedy must be directed at the cause of the evil which can be stamped out only by legislative action freeing those responsible for the administration of military justice from the domination of command. Nonetheless, the civilian composition of the Court may have served at least to remove some of the suspicion the civilians have about military justice.

Congress by the Uniform Code intended to extend fair judicial treatment to the military accused. The task of ensuring that justice be done in each court-martial is way beyond the scope of the Court. The bulk of accused persons must look initially to the trial court and later to the inferior appellate military agencies for justice. Therefore, in the final analysis success of the Uniform Code rests in the manner in which the military justice personnel both at the trial and intermediate appellate levels are willing to truly follow the letter and spirit of the statute as interpreted by the Court. The burden of proof seems to be on the military, and it can be met only by an affirmative showing that the present system can work without further divesting of military power over the court-martial system. If the present system does not work, then any change that Congress may make will undoubtedly be a further deprivation of the control of the military. In any event, military justice is slowly but surely marching forward.

FOREIGN COMMERCE AND THE FEDERAL ANTITRUST LAWS OF THE UNITED STATES

by WILBUR LINDSAY FUGATE*

There has been particular interest recently in the problems arising from the application of the federal antitrust laws to foreign trade. Much concern has been expressed in business circles with respect to recent cases in which the courts have applied the antitrust laws to acts beyond the borders of the United States, and have required the divestiture of foreign holdings of American companies as a matter of relief.

The *Timken* case (*Timken Roller Bearing Co. v. United States*, 341 U.S. 593 (1951)) has raised questions with respect to the operation abroad of foreign subsidiaries, and problems of comity with other nations were presented in the *ICI* (*United States v. Imperial Chemical Industries, Ltd.*, 100 F. Supp. 504 (S.D.N.Y. 1951), 105 F. Supp. 215 (S.D. N.Y. 1952) and *Incandescent Lamp* cases (*United States v. General Electric Co.*, 82 F. Supp. 753 (D.N.J. 1949))). A British court granted a preliminary injunction with respect to a British company carrying out an order of the American court in the *ICI* case.

In a recent survey of American businessmen there was a plea for clarification of the application of the antitrust laws to foreign trade, and this is one subject of study by the Attorney General Herbert Brownell's National Antitrust Committee.

I. JURISDICTIONAL PROBLEMS

A great many of the antitrust problems in foreign trade come under the heading of "Jurisdiction". Foreign trade involves the export of goods from the United States and the import of goods into the United States. By its very nature, it involves acts done and agreements made or to be performed outside of the territorial borders of the United States.

Congress, however, under the Commerce Clause of the Constitution is empowered to regulate such commerce, and in the Sherman Act, it exercised this power. The Sherman Act provides that "Every contract, combination, in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal". Section 2 of this Act makes it a crime "to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations. . . ."

The earliest Supreme Court case on the jurisdiction of the Sherman

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Act with respect to foreign commerce was the famous *Banana* case (*American Banana Co. v. United Fruit Co.*, 213 U.S. 347 (1909)) in which Justice Holmes, speaking for the Court, stated that the Sherman Act had no extra-territorial application. That case involved acts in Costa Rica, including seizure of plaintiff's plantation and interference with the construction of a railroad necessary for shipment of bananas to the United States, which were permitted by the law of that country. A complaint upon these facts was held not to state a cause of action. Subsequent cases have departed almost entirely from the philosophy of the *Banana* case, but it has never been overruled. It is usually distinguished upon the ground of the refusal of our courts to interfere with the sovereignty of another nation.

The Supreme Court, in a number of later shipping cases, held that our courts had jurisdiction over international transportation systems, a part of which was in the United States. And in the *Sisal* case (*United States v. Sisal Sales Corporation*, 274 U.S. 268 (1927)), the Court held that jurisdiction was properly exercised with respect to a conspiracy, which included acts done and contracts entered into in the United States, to destroy competition in the importation of sisal from Mexico. American companies, and foreign companies over which the court has obtained personal jurisdiction, have been held in violation of the United States antitrust laws for acts and agreements outside of the United States which have effects within the United States. Thus, in the *Alcoa* case (*United States v. Aluminum Company of America*, 148 F. 2d 416 (2d Cir. 1945)) Aluminum, Limited, of Canada was held to have violated our antitrust laws because of agreements with other foreign companies to fix prices of aluminum imports and restrict the quantity imported into the United States. Judge Learned Hand there stated that the case came under the rule that a state may impose liabilities, even upon persons who are not nationals thereof, for conduct outside of its borders which has consequences within its borders which the state reprehends. It is noteworthy in the *Alcoa* case, however, that the acts of Aluminum, Limited, were not imputed to the American company, Alcoa, merely because of the fact that a majority of stockholders of each company were the same.

The *National Lead* case (*United States v. National Lead Co.*, 332 U.S. 319 (1947)) is representative of a number of foreign trade antitrust cases in which the court assumed jurisdiction over a world-wide conspiracy violative of our antitrust laws when a part of the conspiracy was carried on in the United States.

In the *ICI* case, the United States court ordered the British company, Imperial Chemical Industries, Ltd. (ICI) to reassign back to the American company, du Pont, certain British nylon patents so that du Pont could grant an immunity thereunder to licensees of its corresponding United States patents. The court did this because the assignment from

du Pont to ICI was made after the antitrust suit was instituted, for the purpose, as the court found, of defeating the court's jurisdiction.

This case had repercussions in England and the British Court of Appeal upheld a preliminary injunction against such re-transfer where the rights of another British company not before the American court were involved. The British court, however, recognized the jurisdiction of the American court, in a suit between persons who were nationals of the United States, or were otherwise subject to its jurisdiction, to make orders *in personam*, directing such persons to do something or to refrain from doing something in another country affecting the other party to the action.

The United States courts, in determining whether alien companies are doing business within a district for the purpose of jurisdiction and venue have taken into consideration that if jurisdiction is not sustained, the alien company cannot be held accountable for its crimes and torts in the United States. This feeling is evident in antitrust cases. The leading antitrust case is the *Scophony* case (United States States v. Scophony Corporation of America, 333 U.S. 795 (1948)) in which jurisdiction of a British company was sustained on the basis of the activities of a wholly-owned American subsidiary organized primarily to carry on the affairs of the parent company in the United States. This consisted mainly of the exploitation or attempted exploitation in the United States of the British company's United States patents and an effort to save the British company's investment in the United States.

The Court in the *Scophony* case held that the requirements of Section 12 of the Clayton Act as to the presence of a foreign corporation within a jurisdiction was satisfied both as to service of process and for the purpose of venue if the company was transacting business "of a substantial nature within the jurisdiction". In the *ICI* case the district court, in a similar holding, observed that:

... ICI has taken advantage of the opportunities here for its corporate advantage; it has received the benefit of the laws of the United States; it must expect to be required to answer for their breach.

Where a foreign company is engaged in a governmental function for a foreign government, however, the principle of the immunity of a sovereign state from suit applies.

Reference has been made to the jurisdiction of a United States court to make orders to be carried out in a foreign country. In several antitrust cases, American courts have ordered both American and foreign nationals before the court to divest themselves of their holdings in foreign subsidiary companies where the subsidiaries had been used as an instrument of antitrust violation. In addition to such orders by way of relief, United States courts in antitrust cases have ordered companies

before them to produce documents located in foreign countries, and have even ordered companies before them to produce documents of subsidiaries in foreign countries. This action has sometimes brought forth protests and retaliatory legislation in foreign countries. The Province of Ontario in Canada, for example, passed a statute forbidding domestic companies to obey an order of a foreign court to remove documents from the province. In the recent *Oil Cartel* investigation, such a prohibition of foreign law was held an excuse for the nonproduction of documents.

The question was presented in the recent *Bayer* case (*General Aniline & Film Corporation v. The Bayer Co., Inc.*, 305 N.Y. 479, 113 N.E. 2d 844 (1953)) as to the effect of an antitrust decree of an American federal court invalidating a contract and enjoining performance thereof by the American party where the foreign party to the contract was absent from the jurisdiction. The New York Court of Appeals held in that case that such a decree was not binding upon the absent party, at least as with respect to a consent decree, but that the lower court might consider a stay pending further proceedings by the Government against the absent party (or rather its assignee) in the federal court which rendered the antitrust decree.

II. SPECIAL ANTITRUST FOREIGN TRADE STATUTES

The Webb-Pomerene Export Trade Act permits American companies to combine for export trade, within strict limitations, as an exemption from the Sherman Act. The export associations so formed must register with, and are subject to supervision by, the Federal Trade Commission, but they are also subject to suit by the Attorney General if they violate the Sherman Act outside of the exceptions of the Webb Act. The association must be "solely" engaged in export trade and its acts and agreements must not be in restraint of trade within the United States nor in restraint of the export trade of any domestic competitor.

The Webb Act will not protect United States companies which join foreign cartels to restrict imports into, or fix the prices upon goods imported into, the United States. It further will not protect competing American companies (at least where the group is dominant) who establish joint factories abroad and agree not to export to foreign markets in competition with these foreign factories.

While there is still perhaps a question with respect to the legality of a Webb association joining with foreign producers to fix prices or quotas in, and to divide among themselves, foreign markets, the *Alkali* case appeared to condemn this practice (*United States v. Alkali Export Ass'n*, 86 F. Supp. 59, 68-71), and where the United States is an included market, there is no question but that it is illegal.

The Webb Act, under present interpretation, would appear to permit

a majority of American manufacturers in an industry to form an export company and assign stock therein to members according to production, to use the export company as their exclusive foreign outlet, to refuse to handle the products of American competitors, to determine at what quotas and prices members should supply the export company, to fix resale prices for the export company's foreign distributors, and to limit distributors to handle only members' products. Apparently an export company may also be used not only for actual export, but also merely to fix prices and quotas for export by the members, but this practice was attacked in congressional hearings in 1950 as being a violation of law.

The Wilson Tariff Act is also a special foreign trade antitrust statute, but unlike the Webb Act, it was designed to strengthen the Sherman Act in foreign trade. The act, in essence, repeats the Sherman Act provisions but with particular respect to foreign trade. Many foreign trade cases have been brought under both acts. The Wilson Act has a similar, but stronger, provision than the Sherman Act providing for the forfeiture of property imported into the United States in violation of the antitrust laws. The forfeiture sections of the two acts have been used infrequently, but rather successfully, with the purpose of forcing a foreign company to appear and respond to a charge of antitrust violation.

III. QUESTIONS OF SUBSTANTIVE VIOLATION

Most foreign trade cases have arisen in the context of an international "cartel" arrangement, which term has been defined, in brief, as a combination of producers for the purpose of regulating production or prices. Usually cartels include dominant producers in a number of countries and encompass world-wide arrangements. This fact, of course, often makes it difficult to determine the legality of particular practices in themselves.

Justice Jackson, in his dissent in the recent *Timken* case (*Timken Roller Bearing Co. v. United States*, 341 U.S. 593, 606 (1951)), suggested that activities which are illegal in interstate commerce, might nevertheless be legal in foreign commerce, having in mind the existence of trade barriers and different conditions in foreign trade. While the majority of the Court did not accept this view, it has occasioned much comment and discussion.

An argument often made in the foreign trade cases is that the restraints are reasonable as ancillary to a main lawful purpose, e. g., a joint venture or patent or trademark licensing. Since, however, the practices usually involved in cartel cases are those considered to be unreasonable *per se*, and the facts of most of these cases have indicated a primary purpose to restrain trade, there has been scant opportunity for the courts to apply either the rule of reason or the ancillary restraints doctrine. There has been some criticism, however, that in condemning so-called *per se*

practices in foreign trade, the courts have thrown doubt upon otherwise legitimate activities.

Price fixing agreements, even though made abroad, relating to prices in the United States have uniformly been held illegal, and it would appear that price fixing arrangements engaged in by American and foreign companies abroad, with respect to *foreign* markets, may also subject the American party to liability, at least where the United States market may be affected thereby.

A division of market territories which includes the United States comes within the *per se* rule of illegality, and such an arrangement may be illegal even where the United States market is not included. An allocation of quotas of production or shipment for various markets is really the same thing as a market division and has been similarly condemned.

The possession of patent rights has been held not to excuse the above mentioned practices, but in practically all of the cases involving them, the restrictions have not been co-extensive with the patent rights. There have been a few cases which suggest that restrictions upon import and export may be valid where ancillary to the licensing of patents or secret processes, including the very recent *Cellophane* case (*United States v. E. I. du Pont de Nemours & Co.*, 118 F. Supp. 41 (D. Del. 1953, appeal noted April 23, 1954)).

Patents and trade-marks have played a large part in recent foreign trade cases since the usual pattern found therein has been an exchange of patents with territorial restrictions upon use, express or implied, or a licensing of trade-marks exclusive for particular areas. It should be borne in mind, in considering these cases, that the patent monopoly and the trade-mark registration granted by a state are limited to rights within that state. Thus, foreign patents carry no rights in, and therefore cannot excuse restrictions upon, import into, or use or sale in, the United States. Conversely, a United States patent carries no rights in, and cannot excuse restrictions upon export to foreign countries.

Some patent practices in foreign trade have been questioned in themselves. Thus, while a requirement in a patent license for a grant-back of future patents for licensed territories has been upheld as not illegal *per se*, it has been condemned where used to regiment an industry. Cross licensing of patents in foreign, as in domestic, commerce may be unlawful where part of a plan to restrain commerce or where engaged in by dominant firms in an industry on an exclusive basis. It may also be unlawful in foreign commerce for dominant companies to cross license present and future patents upon a field and territorial basis. In addition, cross licensing of patents may be considered as strong evidence of a division of territories.

Trade-marks have also been of importance in foreign trade cases. The

same trade-marks may be owned by different owners in different countries and the owner in the United States, for example, may keep out, at Customs, articles bearing the mark. Where the primary purpose of trade-mark licensing, however, is to divide markets, it has been held unlawful.

The foregoing discussion indicates the many antitrust problems in the foreign trade field. Many questions remain to be answered but the courts have laid down fairly definite rules in at least some areas with respect to what is unlawful. Where the primary object of a foreign trade arrangement is lawful, the courts will consider whether restrictions are ancillary thereto. In the usual world-wide cartel case, however, the facts have not supported contentions as to a primary purpose of promoting trade.

The exercise of extra-territorial jurisdiction by our courts in anti-trust cases has gone rather far in some cases where considered necessary to break up world-wide cartel arrangements which restrict United States trade. The decree in the recent *Incandescent Lamp* case, however, showed a disposition by that court to be very careful in directions to parties to take effect in foreign countries. One provision was that no party would be in contempt of the decree for doing anything required by foreign law. A similar provision was included in the *ICI* case.

The foreign trade antitrust cases show a vigorous effort on the part of the Government to break up arrangements inimical to our foreign trade. It is understandable that in this effort, difficult problems, such as that of extra-territorial jurisdiction, should have arisen. Further, the courts have been confronted with unusual situations peculiar to foreign trade. There is no indication, however, that the courts cannot successfully deal with these problems.

INTERNATIONAL LAW OF MARITIME RESOURCES

by EMORY CLARK SMITH*

This study begins by reviewing the various resources of the sea, the sea-bed, and the subsoil. Among the chemical resources of the sea are salt, bromine, magnesium, iodine, and sulphur. Among the minerals found in the sea are gold, silver, iron, copper, and lead.

It has also been determined that sea water contains a remarkable resource of power.

As for fishery resources, they are found to range from microscopic Protozoa to the largest of all mammals, the blue whale. Plankton constitutes the broad food base for fishery life in the sea. The tuna fishery has become the most valuable marine fishery of the United States. The Alaska salmon pack amounts to 60 per cent of the total production in the world with a current annual value of approximately ninety million dollars. The halibut fishery is one of considerable size. The fishery for shrimp in the Gulf of Mexico is one of the most rapidly growing and valuable fisheries.

It is known that an acre of good sea floor can produce nine tons of clam meat a year. Pearl fisheries are found to be widely scattered over the globe.

Among the mineral resources of the subsoil of the sea are coal, iron, gold, and oil. Of these minerals oil is the most valuable and also the most controversial.

Consideration is next given to the national regulations of the fishing industry. A treatment of early exploitation of fishery resources within territorial waters is indispensable to a better understanding of the basis for more expanded claims. The early law developed in a fairly concrete fashion, and culminates with rather definite conclusions, to-wit, that within the territorial waters the jurisdiction of a state is absolute and exclusive. Any exploitation of maritime resources within the marginal belt was by license of the littoral state. Outside the territorial waters exploitation was open to all.

During the past seventy-five years many of the world's great fisheries have been threatened with severe depletion or extinction. If such fisheries were to survive, conservation measures were mandatory. American industry developed the Bristol Bay salmon fishery in accordance with strict conservation measures, only to see Japanese incursion observing no conservation measures threaten the extinction of this fishery. Having developed the fishery, the United States took the position that it had the right of control over it.

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Since 1839 all British legislation makes consistent application of the three-mile limit of territorial waters to all questions of fishing rights. Beyond the marginal sea British practice has clearly shown that no authority will be exercised with respect to fishery regulations except pursuant to agreement with other states. This principle was set forth in the North Sea Convention of 1882. The Northern Pacific Halibut Act of 1937 is illustrative of the exclusive jurisdiction asserted by the United States with respect to fisheries within its territorial waters. Other nations similarly claim exclusive jurisdiction within their respective territorial seas.

During more recent years various nations have sought to establish fishery conservation zones in contiguous areas of the high seas. The Truman proclamation in this regard issued on September 28, 1945, is the most noteworthy. This proclamation states that it is proper to establish explicit conservation zones where the activities have been or are hereafter developed by United States nationals alone. Where the fishing activity has been developed jointly by the United States nationals and the nationals of another country, then explicit conservation zones may be established under agreements between the United States and such other states subject to regulations and control as provided in the agreement.

The Proclamation concedes the right of other states to establish conservation zones in accordance with the principles applied by the United States in its Proclamation. The Proclamation expressly stipulates that the waters affected by the conservation zones would in no way lose the character of high seas, and the right to free and unimpeded navigation is in no way affected.

The United States Proclamation has been followed by a number of similar proclamations by other nations, particularly Latin American states.

The question as to what, if any, formalities are required for the establishment of fishing conservation zones is next considered. As we have seen, states early recognized the necessity of conserving fisheries in their territorial seas. Also, international agreements would be of little effect in conserving fisheries if non-signatory states failed to observe the regulations. Also, due to the migratory nature of fish, they do not confine themselves to any certain limit of the sea. Added to these considerations, is the factor of a fishery which has been developed by one state alone, and the special interest therein which such a state derives. It would seem that all of these circumstances probably warrant the assertion of a qualified unilateral control to areas of the high seas for the special purpose of conserving the fishery.

States have customarily asserted jurisdiction over the high seas for special purposes, such as customs, sanitation, and security.

The Bering Sea fur seal arbitration is an early example of an effort to conserve a high seas fishery.

Many of the Latin American claims have used a depth or mileage formula to limit their claims. However, the United States makes no mention of the areas to be set aside for fishery control. No doubt any United States zones would be delimited only after scientific investigation of the fishery.

The matter of what circumstances would warrant a withholding of recognition of fishery claims by other states should be considered. The United States made reservations to certain of the Latin American assertions on the grounds that their claims were to sovereignty and not to jurisdiction and control. The objection to the use of the word "sovereignty" apparently stemmed from a fear that it would derogate from the freedom-of-the-seas principle of international law. Other United States objections were prompted by a failure of certain decrees to adequately recognize United States rights to certain high seas fisheries.

International regulation of the fishing industry was prompted by various factors. Among these factors were the inadequacy of policing of fishing grounds, which led to frequent brawls among fishermen, intentional destruction of gear, and collisions. In addition, the productivity of certain fisheries began to decline perceptibly toward the close of the nineteenth century. The earlier treaties seemed to have as their objective the keeping of peace among fishermen, whereas the later treaties had conservation of the resource as their principle objective.

The North Sea Convention of 1882 was directed at the policing of the fishery. The first convention aimed at conservation of fisheries was the Baltic Convention of 1929. Potentially the most important of a series of conventions was the London Agreement of 1937. Although it was never ratified, it was the most comprehensive treaty as regards the species of fish included, the area covered, and the number of states participating.

A series of conventions were concluded for the protection of whales, the most recent being the Washington Convention of 1946.

The Bering Sea fur seal dispute was referred to a Tribunal of Arbitration in Paris in 1893. This arbitration was followed by a four-power treaty for the protection of seals in 1911. In 1924 Canada and the United States concluded an agreement for the purpose of the preservation and development of the halibut fishery of the North Pacific Ocean, and provided for the establishment of an international Fisheries Commission. This was superseded by a treaty between the same parties in 1937.

In 1930 the sockeye salmon convention was concluded by America and Canada. The Bristol Bay salmon fisheries controversy occurred in 1937, and upon representations of the United States concerning its development of the fishery, Japan agreed to withdraw its fishermen from the area.

The North Atlantic Fisheries Convention of 1949 established an inter-

national commission whose primary function is to collect, collate, and disseminate scientific information on international fisheries in the convention area.

Likewise in 1949 the United States entered into separate agreements with Mexico and Costa Rica for the purpose of the scientific investigation of tuna fish.

More recently a Tripartite Fisheries Conference was held in Tokyo in 1951 which resulted in a draft convention between Japan, Canada, and the United States. This proposed treaty not only contained the usual provisions of mutual restraint found in conservation agreements, but also included provisions for abstention from certain fisheries on the part of some of the parties.

Judicial precedent in the field of international fishery regulation is found in the British-Norwegian Fishery Case heard before the International Court of Justice in 1951.

The main importance of this case seems to lie in the principles of international law to which judicial recognition has now been given.

Protection of the resources of the sea, aside from conservation agreements, is deserving of important consideration. The term "epicontinental sea" is generally understood to mean the waters of the sea covering the continental shelf. Claims by various states to the epicontinental sea have been considered in detail. If exploitation of the seabed and subsoil is recognized, it would seem only natural that the littoral state should be permitted to exercise that control over waters of the epicontinental sea that would insure protection of the underlying resources. Such measures should be permitted only for the special purposes of protection, and must be reasonable.

The British-Venezuelan Agreement of 1942 covering the waters of the Gulf of Paria contained provisions for protection of the resources of the sea from pollution. Most nations have domestic laws aimed at preventing pollution of the sea water within certain limits, usually the territorial sea.

In considering the exploitation of the resources of the seabed and subsoil of the continental shelf account must be taken of the geological factors to the end that the application of legal principles may be properly guided. Many of the terms used in connection with the physical factors of the continental shelf must be defined.

Due to the fact that the shoreline is constantly changing by reason of varying tides and the mass movements of the earth's crust, both vertical and horizontal, the shoreline becomes an unsatisfactory basis for delimitation of the area of the continental shelf. The proper formula to be applied in delimiting the area of the continental shelf, is to place the boundary at the outer margin of the continental shelf or continental borderlands and refer this line to fixed points tied to the primary geodetic

net of the littoral continent, rather than relate it to the shore line or a depth formula. The formula advocated possesses the characteristics of uniformity, fixity, and certitude required for legal transactions.

The principal resources of the seabed are sedentary fisheries. There seems to be general agreement that sedentary fisheries are to be considered differently from free-swimming fisheries as a matter of law. Gidel is of the opinion that the principle of the freedom of the seas involves the right for all to fish freely on the high seas, but sedentary fisheries limit this right as far as the "sedentary" species are concerned. The International Law Commission concluded that the question of sedentary fisheries should not be connected with the continental shelf. The writer does not concur with the conclusion. If it is assumed that the littoral state has at least a paramountcy of right to its continental shelf, then such right should include the seabed as well as the subsoil. Sedentary fishery species, when ready to harvest, affix themselves to the seabed. Other sedentary resources such as kelp likewise are affixed to the seabed. It would seem, therefore, that a littoral state should have as much freedom of regulation of the resources of the seabed as it does to resources of the subsoil.

With respect to the resources of the subsoil of the continental shelf, history shows that such resources have been uniformly claimed by the riparian state when discovered within reach of the shore. Petroleum was discovered in the continental shelf for the first time off the California Coast in 1894. It was not until 1942 that the continental shelf concept was applied to the exploitation of the natural resources, instead of to the protection of fishing. This was done in the Treaty between the United Kingdom and Venezuela, which undertook to divide the Gulf of Paria. It is fairly clear that it was the intention of both parties that each should enjoy the fruits of the areas free from interference of other states.

Later, on September 28, 1945, the Truman Proclamation was promulgated concerning the resources of the seabed and subsoil. This proclamation was regarded by the International Law Commission as being destined to mark a turning point in international law as it applies to maritime areas. The principle of international law contained in the Proclamation was to the effect that a littoral state has the right to exploit the resources of the seabed and subsoil of its adjacent continental shelf.

The Truman Proclamation was followed by similar assertions of rights to the continental shelf by other nations.

The International Law Commission concluded that the submarine areas of the continental shelf off the coast of a littoral state and outside the area of its territorial waters are subject *ipso jure* to the control and jurisdiction of the littoral state. The right of control and

jurisdiction was limited to the sole purpose of exploring and exploiting the resources of the continental shelf.

The legality of unilateral acts is next considered. The main value of unilateral acts is found in the initiative impulse which such acts give to a new development of international law, and at the same time, from a national point of view might be construed as acts of economic self-defense—a sort of conservatory seizure or attachment to prevent other states from exploiting the resources of the shelf.

The processes of exploitation should not be of such a nature as to interfere unreasonably with the freedom of navigation, with fisheries, or with marine life.

With respect to conclusions and future development of the law, it is the writer's opinion that instead of the depth formula for measuring the extent of a state's jurisdiction over its continental shelf, the limits should be defined from the outer edges of the shelf shoreward.

The International Law Commission has applied the test of exploitability in defining the extent of the shelf. However, in the opinion of the writer, such a test might itself require further definition eventually.

It is contended that to place sedentary resources in the category of resources of the continental shelf would generally simplify the legal basis for protecting them.

As for installations on the continental shelf used for subsoil exploitation, it appears that such installations do not permit of a territorial belt around them. A safety zone of 500 metres appears to be sufficient.

The question of whether navigation or fishing or the exploitation of natural resources is the chief interest in a particular area is one of fact, and priority of right should be determined accordingly.

Where the continental shelf of one nation adjoins that of another it would seem that international law will require agreement between the two states concerned as to the proper boundary. Likewise, where there is a continental shelf common to two or more states, the same principal should apply.

The sole objective of any legal regime pertaining to fish is the conservation of the resource. Unless conservation action is based on the findings of scientific investigations, it always will be difficult, if not impossible, to justify and support restrictions imposed on activities in the fisheries. Some means should be provided for reasonable flexibility in the adoption and application of positive rules regarding fisheries. This principle obviates the necessity of re-negotiating a fishery treaty each time it becomes necessary to change the rules.

It has been said that the Truman Fisheries Proclamation of 1945 must be regarded as a victory for the principle that a littoral state is legally entitled to provide, even outside its territorial waters, the protection required for the conservation of fisheries.

REGULATION AND CONTROL UNDER THE COMMERCE AND WAR POWERS AND JUST COMPENSATION UNDER THE FIFTH AMENDMENT

by JOHN WALTON WYATT*

The Constitution of the United States of America provides that private property shall not be taken for a public use without just compensation. The purpose of this study was an attempt to ascertain the circumstances under which that clause of the Constitution demands the payment of just compensation when the commerce and war powers of Congress are brought into action.

A probe into the problem revealed that the *modus operandi* has been to determine whether or not the action complained of constituted a taking, and, although most of the litigation has revolved around the words "consequential losses" and "taken", a clear-cut definition of the words is conspicuously absent. The absence of such a definition, however, is understandable because the meaning of the words depends upon the circumstances under which they are being used.

It was also revealed that (1) although the words "consequential injuries" and "consequential damages" are used freely and synonymously, they have reference to three different kinds of losses, namely—(a) those which result from lawful governmental regulations, (b) those which are noncompensable when ascertaining just compensation, and (c) those which result from lawful governmental activity and which do not meet the judicial standards of a taking; and (2) that private property may be taken by (a) condemnation, (b) requisition, and (c) a taking by physical control. The solution to the problem was thereupon approached by using these generalizations as a convenient starting point. Each segment had to be treated separately because the rules which are applicable to one become insignificant when applied to another.

The first-mentioned negative generalization (losses which result from lawful governmental regulations) is evidently the result of an exercise of the police power rather than the power of eminent domain. But the view that the police power was left to the states by the residual clause of the Constitution and the corresponding reluctance on the part of the judiciary to acknowledge a federal police power has encouraged speculation as to whether the promulgation of regulations penetrates the boundaries of eminent domain.

However, it is well settled that the imposition of uncompensated charges involved in obeying a law, passed by the states in a reasonable

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exercise of the police power, is not a taking of private property, and that both the commerce and the war powers of the Congress have been held to be as broad in their appropriate fields as the police power of the states raised to its highest degree. Lawful governmental regulations, therefore, promulgated as an exercise of the police power coupled with an enumerated power, which merely restrict the use of property, do not constitute an exercise of the power of eminent domain.

It is true, however, that the courts in deciding this line of cases have held the statute or order to be either (1) constitutional because it was found not to be arbitrary and confiscatory, but rather had a real relation to the purpose of protecting the public health, safety, or morals, or (2) unconstitutional because of a contrary finding. But in all such cases the due process clause has served to protect the property owner.

No attempt was made to determine the scope of the due process clause, but a working assumption was used, namely, that if the property owner was protected by the due process clause the just compensation clause had been complied with. However, by segregating these decisions from those which require compensation, the distinguishing features of a regulation and a taking become more apparent: (1) eminent domain is applied separately to individual owners, as compared to a regulation which is laid upon the whole community; and (2) eminent domain is unilateral in the sense that it is executed by paramount authority regardless of the individual will, as compared to a regulation, where obedience with immunity or violation with punishment depends upon the discretion of the individual. Concisely stated, the distinction between a regulation and eminent domain appears to be whether or not the property owner is afforded an opportunity to obey or disobey.

The second of the negative generalizations (noncompensable losses when ascertaining just compensation) includes, generally, the enhanced value of the property because of (1) the Government project, which, it was reasonable to assume at the time of its initiation, would include the property in question, (2) its particular fitness for the Government's purpose, and (3) its adaptability to the needs of the owner. Although compensation is always awarded for the subject-matter taken, it is also true that items, such as loss of anticipated profits, damage to good will, and expense of relocation are usually held to be consequential losses. It may be, however, that these losses will be considered when ascertaining compensation for property taken by the comparatively new device—a *temporary taking*.

The first and second of the affirmative generalizations—condemnation and requisition—pose comparatively few problems. Condemnation by judicial proceedings is the accepted method of exercising the power of eminent domain. Requisition, however, is more often resorted to when necessity for quick action in obtaining possession of property needed for

war purposes makes it impracticable to use the accepted method. As a general rule, however, although the various factual situations render the rule flexible, an acquiescence will negate a finding of requisition. Consequently, if it is found by the courts that the individual by his actions has parted with his property voluntarily, the transaction will be construed as a contract of sale rather than a requisition.

The third of the affirmative generalizations (a taking by physical control) might more properly be referred to as "tortious eminent domain", and is indeed difficult to decipher. Unlike condemnation, it is a property owner's suit against the government, but nevertheless has sufficient of the characteristics of eminent domain to be so classified: (1) the protective shield of the due process clause and the volition element of a regulation are both absent, and (2) the action is applied separately to individual owners and is unilateral in the sense that it is executed by paramount authority regardless of the individual will. It is, nevertheless, sometimes hazardous to attempt to accurately classify the action, because many of the losses fall within the third of the negative generalizations—losses which result from lawful governmental activity and which do not meet the judicial standards of a taking.

The approach of the judiciary has been to determine if, upon the particular facts of the case, there has been a taking, which would, in turn—unless the Government expressly negates an intent at the time the tort is committed—give rise to a contract implied in fact.

The reason for the development of tortious eminent domain is not stated. But the fact that the Constitution of the United States, unlike many state constitutions, makes no provision for property which has been *damaged*—the word used is *taken*—and the fact that Congress, in 1855, waived its sovereign immunity to include all claims founded upon the Constitution of the United States or upon any contract, express or implied, but excluded cases sounding in tort, at least appear to be contributing factors.

The careful preservation of the distinction between tort and contract, however, has at times been only verbal, because recovery has been allowed for both trespass and conversion. Indeed, the tortious eminent domain decisions appear to have been born of judicial desperation because the Supreme Court, confronted with the aforementioned limitations, was nevertheless desirous to do justice to an individual whose property had been subject to tortious eminent domain.

An authorized entry within the bounds of private property and the occupation of such property for the public use, or the construction of a public work thereon which would amount to total appropriation, is unquestionably a taking in the constitutional sense. An unauthorized invasion of property is not compensable, but if an officer of the Government is exceeding his authority or is acting under an unconstitutional

statute and in so doing physically invades property rights, the action may be enjoined or the officer ejected. It is also true that the exemption of the United States from suit does not protect its officers from personal liability to persons whose rights of property they have wrongfully invaded.

Injury to or destruction of private property, however, constitutes a more difficult problem, which becomes aggravated because the interpretations, with respect to the commerce and the war powers, are in many instances restricted to the respective powers.

THE COMMERCE POWER

It has long been settled that the power given Congress to regulate and control commerce between the several states includes the improvement of navigation for the general public benefit, which right of the public has crystallized in terms of a servitude over the bed of the stream of the navigable waters of this country.

STRUCTURES

During the last quarter of the Nineteenth Century bridges were constructed by private enterprise over the navigable waters either under state legislation without license from Congress, or with Congressional permission and sometimes coupled with a reservation of the right of revocation or amendment. For over four decades, a diversity of views prevailed as to whether or not Congress had the power to cause alterations to be made to bridges without compensating the owner therefor. Finally, in 1917, it was settled that Congress may declare any and all bridges, although concededly lawful structures when constructed, to be illegal and require their alteration or removal without offending the just compensation clause. As was true in many of the earlier decisions, no mention was made of the police power. But under that power the state may abate nuisances and by similar reasoning the Congress may exercise the police power coupled with the commerce power and thereby keep the navigable waters free from obstructions, because no one has a vested right to operate a bridge which has become an obstruction to navigation, for to do so would seriously impede the progress of this country.

RIPARIAN OWNERS

The injury to or destruction of common-law rights of riparian owners by the United States in the improvement of navigation is not recoverable under the just compensation clause of the Fifth Amendment. The earlier cases attempted to formulate rules by referring to such losses as consequential or incidental, but the words were not concisely defined and

therefore had no fixed meaning. Consequently, it is not surprising that the courts floundered hopelessly in applying the rules.

The Supreme Court eventually rested the decision on the servitude doctrine. The doctrine has been interpreted to include all the water and submerged soil from high-water mark to the thread of the stream, and, although it is generally believed that this doctrine extends to the stream in its natural condition only, the rights of riparian owners today are servient to any change which Congress desires to effect. Rights of riparian owners, therefore, are not *private property* within the meaning of the just compensation clause when they come in conflict with the commerce power.

The power of Congress to provide for the general public benefit in aid of navigation is beyond dispute, and, although no strong and impelling reason has ever been given for refusing compensation for injury to or destruction of rights of riparian owners, such a refusal opens the door to curious speculation. At the turn of the century when this law was being developed, this country was still a young nation and the elaborate taxing system of today was unknown. It may be that the Supreme Court felt that Congress would be discouraged from making improvements or the country would be led to financial disaster if the general public were taxed to repay owners for riparian rights impaired or destroyed in the improvement of navigation.

Ample authority exists for the destruction of private property in the interest of health, morals, and safety; but no cases were found which held that private property might be summarily destroyed in the interest of the general welfare. As between the servitude doctrine and the police power, therefore, the Supreme Court probably made the more judicious choice.

In order to constitute a taking of the upland, as a general rule, there must be a direct invasion. The Supreme Court has not defined the term "direct invasion", but from the expressions used and from the conclusions reached in these navigation cases it seems clear that the term is used to denote an actual physical invasion of the upland, which amounts to an ouster, partial or total, and which can be specifically attributed to the action of the United States. If the loss, however, can be attributed to any intervening cause it will not be held to be a direct invasion.

THE WAR POWERS

The war powers are not broad enough in times of peace or during the mere existence of a state of war to justify injury to or destruction of private property, and the circumstances under which property may be physically interfered with without compensation depend on the various factual situations. The reasons offered, particularly in the early decisions, for allowing or disallowing compensation closely parallel those with

respect to riparian rights before the crystallization of the servitude doctrine, but conflicting opinions render the rules of little value. The elements most often relied on to constitute a taking are (1) an intent, but conversely it is said that a contract would be implied whether thought of or not; (2) the physical interference must be direct, but conversely it seems quite clear that if property is rendered uninhabitable by any interference the loss is compensable; and (3) the loss must be substantial, but conversely the just compensation clause makes no limitation.

It would seem, however, that the just compensation clause would be more nearly complied with if the courts, rather than laboring over the questions of intent, direct and indirect invasion, consequential and incidental damages, substantiality of the loss, and the like—a seemingly hopeless proposition—would determine whether or not losses which result from lawful governmental activity could be attributed to a proper exercise of the police power. In the absence of such a finding—a taking by physical control being the only remaining alternative—the courts should proceed to award just compensation in accordance with the damages that the owner has suffered. If no damages are suffered, it seems irrelevant to pursue the argument. The time may have arrived when the Supreme Court could be persuaded to accept this view, because in a recent decision compensation was awarded for a loss which resulted from lawful governmental activity and it was said the cause of action was founded on the Constitution.

The just compensation clause is not suspended during times of war, but during such times the power to injure or destroy property is considerably greater and more obviously in the theater of operations than in the zone of the interior. The theater of war is the whole of the area which is or may become involved directly in the operations of the war and is divided into (1) a zone of the interior, and (2) a theater of operations, which is composed of a combat zone and a communications zone.

ZONE OF THE INTERIOR

If the United States were confronted with threatened invasion, a corresponding duty would be imposed on the Government to protect the people from attack by the hostile power. Precautionary directives, therefore, even though they result in injury to or destruction of private property would no doubt be justifiable. These losses might more properly be attributed to an exercise of the war powers coupled with the police power, which power is surely broad enough to include the power to secure the general safety, and, viewed in this light, it imposes a duty on the Government to protect itself and its citizens against physical danger. If the threatened invasion should become a reality, the whole of the zone of the interior might become the theater of operations, in which case it is possible that the just compensation clause would be rendered a nullity.

THEATER OF OPERATIONS

Private property which is destroyed or injured in the theater of operations as a result of the ravages of war is not a taking of private property within the meaning of the Constitution. There is, however, a twilight zone when the theater of operations fades into the zone of the interior, and, for the most part, it is with respect to this twilight zone that the authorities are in disagreement on the question of compensation. Although the Supreme Court has recently answered the question in the negative, throughout the history of the United States conflicting views prevailed over the precise question: is the destruction of property to prevent it from falling into the hands of the enemy a part of the law of eminent domain?

The early political writers recognized (1) the power of overruling necessity whereby private property might be deliberately destroyed, and (2) the power of eminent domain whereby private property might be taken for a public use. The distinguishing features between the two powers are quite apparent: the law of overruling necessity admits of neither delay nor choice and requires no compensation, whereas the law of eminent domain admits of a discretion and requires compensation.

Unless the loss falls within the official selection doctrine, whereby if one of like property is destroyed and others left, it is a matter of official selection and is a part of the law of eminent domain, it seems clear that whatever will impede the advance of the enemy is a part of the law of overruling necessity. Many reasons have been offered for the rule, but the one accepted by the judiciary is that the safety of the state in such cases overrides all considerations of private loss.

SUMMARIES OF DISSERTATIONS
SUBMITTED FOR
THE DEGREE OF DOCTOR OF EDUCATION
1954

ADJUSTING RETIREMENT TO THE NEEDS OF SCHOOL TEACHERS

by PAUL DAVID COOPER *

THE PROBLEM

The purpose of this study is to determine the problems faced by public school teachers in adjusting to retirement, to examine existing policies and practices concerning retirement, and to find ways of adjusting retirement to the needs of school teachers. The serious plight of old people, resulting from the combination of fixed retirement income and inflation, has been widely publicized through newspapers, radio, and similar media. Undoubtedly, the financial situation of retirants is critical and may well be their primary concern. Yet, the very urgency of this economic problem may have obscured other aspects of superannuation which may cause dissatisfaction with that status. Authorities, in increasing numbers, are questioning some of our present ideas and practices with respect to retirement, i.e., the practice of requiring retirement at a fixed chronological age. Medical authorities believe that forced, abrupt retirement has adverse psychological effects upon many people. The value of preparation for retirement is becoming recognized.

This study examines some of these other aspects of retirement in relation to that segment of our older population represented by retired public school teachers. Among the questions considered are:

1. Should existing policies in the field of education, with respect to retirement at a fixed age, be re-examined?
2. Should provision be made for the re-employment of school teachers after retirement?
3. Is there need for an opportunity for teachers to "taper off" into retirement through assignment to less demanding tasks and lighter loads?
4. Can teachers be helped to prepare for retirement and how can such help be given?
5. How can retired teachers be assisted in their adjustment to retirement?

PROCEDURE

Two instruments were constructed for the purpose of gathering information and data for the study. One, a questionnaire, was sent to superintendents of school systems and was designed to reveal retirement policies and practices now in use, and to sample the attitudes of school

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administrators with regard to possible changes in those policies. The superintendents were also asked to evaluate the ability of teachers to continue in their jobs beyond the time when they now retire. One hundred fifty-five superintendents from forty-eight states responded to this questionnaire. They also furnished lists of those retired teachers from their systems who were still living.

A second questionnaire was mailed to these public school teachers living in retirement. This instrument sought to disclose their attitudes toward present retirement policies and toward retirement itself. It attempted, further, to ascertain their present situation in retirement, their needs, and their opinions as to what could be done to meet those needs. Seven hundred fifty usable responses to this questionnaire were received from forty-seven states. One hundred fifty-four of the school systems mentioned above were represented.

The study also involved a comprehensive review of the literature. An attempt was made to discover the prevalent thinking of authorities in the fields of old age and retirement with respect to desirable policies and practices. Particular attention was given to literature describing retirement practices in fields other than education, with the hope that these sources might suggest approaches to the problems of retired school teachers.

REVIEW OF THE LITERATURE

The survey of the literature disclosed a rapidly developing, nation-wide concern for the problems connected with old age and retirement. The increasing population of older people is causing various communities to establish programs to provide for the vocational, avocational, health, and other needs of this group. Most of the states have established commissions or committees to study the problem. A number of nation-wide conferences have been held, the reports of which provide good coverage of the field. Old age clubs and centers are springing up about the country.

In the fields of business and industry, both labor and management are becoming concerned about the older and retired workers. The literature contains many illustrations of business practices designed to prepare older workers for retirement and to help retired former employees adjust to their situations. Studies reported indicated rather extensive use of such practices as pre-retirement counseling, provision for "tapering off", and maintenance of contact with retired workers. Unions are advocating the adoption of flexible retirement programs. Some business firms have adopted such programs, but, generally, management favors a fixed compulsory retirement age.

There is evidence of increasing interest on the part of the medical

profession. Numerous studies of the physiological and psychological effects of aging are reported. From the literature, it would seem that medical doctors agree, generally, that time of retirement should be determined by some criteria other than chronological age, and that the older person should be continued in employment as long as he wants to work and is able to work.

Universities and adult education groups are beginning to develop programs designed to prepare people for retirement. There are some reports of efforts on the part of teachers' associations to establish homes for retired teachers and to establish welfare programs for those in need. However, from the literature, it would seem that the profession of education has devoted its effort principally to the solution of the financial problems of its retired members. As it makes its attack upon some of the other problems of retirement, the profession could study to advantage some of the practices being developed in other fields.

FINDINGS

The Teacher's Future in Retirement.—The study indicates that, in general, retired teachers are well adjusted to their situations. Of the group studied, three out of five left their work voluntarily, more than two-thirds expected to be happy when they retired, and nearly one-half expected their retirement income to be adequate for their needs. More than one-half had other interests to pursue. Four-fifths of the group were in good health and felt that they could have continued teaching at the time of retirement.

After an average of approximately five years in retirement, 80 per cent professed to be reasonably contented with their retired status, 85 per cent claimed to have sufficient interests to occupy their time, and 67 per cent had not found it necessary to lower their living standards beyond their expectations. While only 25 per cent of the group found retirement allowances adequate for their needs, this was offset by the fact that more than 75 per cent had other sources of income and nearly 40 per cent had been employed since retirement.

On the other hand, it was found that more than 35 per cent did not want to retire when required to do so. More than 25 per cent did not expect to be happy in retirement, nearly 50 per cent anticipated lower living standards, 45 per cent did not expect their retirement income to be adequate for their needs, 35 per cent had no other interests to pursue, and nearly 32 per cent planned to pursue other employment.

At the time of the study, nearly a fifth were discontented in retirement, one out of ten confessed a lack of sufficient interests, nearly a third had been forced to lower living standards beyond expectations, more than two-thirds had found retirement allowances inadequate, one out of

five had no other sources of income, and nearly three out of ten expressed a desire to return to teaching.

The over-all picture is good, but the increasingly large numbers that face problems in retirement give cause for concern.

Policies and Practices Concerning Retirement of School Teachers.—It was found, from the study of policies and practices in 155 school systems, that eleven out of twelve public school teachers are subject to compulsory retirement age, the age being 70 years or over for approximately one-half of the systems. A third of the systems have compulsory retirement ages that may be extended. An almost negligible number of systems reported the practice of reassigning older teachers to less demanding assignments prior to retirement, although superintendents indicate that an appreciable number could continue beyond the time when they now retire, if given such assignments. Only one-fourth of the 155 school systems are permitted to re-employ retired teachers for part-time or lighter assignments, whereas three-fourths of the superintendents state that they would favor such a policy.

A separate study was made of those teachers who had retired because of compulsory age limits, to disclose the possible effects of such retirement policies. For this segment of the sample, it was found that 70 per cent had objected to retirement and 90 per cent felt that their health would have permitted them to continue. Seventy-five per cent have found their retirement allowances inadequate, in spite of the facts that 75 per cent of this group claimed to have other sources of income and that nearly 50 per cent have been employed since retirement. At the time of the study, 40 per cent professed a desire to return to teaching.

Employment of School Teachers After Retirement.—Employment was found to be one of the most important concerns of retired teachers. Nearly two-fifths of the entire sample have engaged in other work since retirement. Of those who have been employed, more than three-fifths have worked because of economic necessity. Of those who had not worked, more than one out of ten confessed that they had wanted employment but had been unable to find it. More than one-half of the entire sample stated a preference for work regardless of economic necessity.

The ability of teachers to work after retirement is reflected in the statements of nearly 75 per cent of them that they could have continued teaching at time of retirement, and of the 56 per cent who believed that they could return to teaching at the time of the study. Two-fifths of the superintendents expressed the belief that more than 25 per cent of the teachers could continue in their jobs beyond the time when they now retire, if given less demanding assignments. As many as three-fourths of the superintendents considered retired teachers capable of part-time work for certain assignments.

Work suited to retired teachers can be judged by their work preferences and the kinds of work they have performed. Seventy per cent expressed a preference for part-time employment. More than 40 per cent prefer work connected with education. Thirty-two per cent of the post-retirement work experiences of former teachers was connected with education.

Helping Retired Teachers Prepare For and Adjust to Retirement.—

It is generally accepted that people can be helped to prepare for a satisfying life in retirement. Yet, from this study, it appears that little help of this nature is available to public school teachers. Only eight of the 155 school systems reported such programs. Closer examination revealed that only one or two systems had well developed programs. No retired teachers were able to report participation in programs of this type. However, three-fourths of the retired teachers said that they would have been interested in a program of preparation before they retired, and a third of the group would have been interested in such a program at the time of the study.

They expressed a desire for help in these specific areas: seven out of ten were concerned about developing new avocational interests; approximately one-half wanted vocational training; more than a fifth were concerned about health problems. The retired teachers listed sixty different jobs for which they wanted preparation, the largest number being jobs related to education. Many expressed avocational interest in the arts and crafts.

Recommendations for Adjusting Retirement to the Needs of School Teachers

1. Policies requiring retirement at fixed chronological ages should be re-examined. In view of the existing trends toward the establishment of fixed age limits and the lowering of those age limits, school systems contemplating action in either direction should consider, instead, the adoption of selective or flexible retirement systems. Such systems should take into account the physical condition of the employee and his attitude toward retirement, in determining when he must retire.

2. School systems should make provision for the re-employment of former teachers after retirement. They want work, they need work, and they prefer work connected with education. There are numerous tasks in the schools that they can perform satisfactorily on a part-time basis.

3. Provision should be made in all school systems for "tapering off". This can be accomplished through the assignment of less demanding duties to older teachers, the liberalization of sabbatical leave in the later years, the assignment of helping teachers, and the reduction of teaching loads.

4. Teachers should be permitted and encouraged to devote part of their inservice training programs to qualifying, prior to retirement, for other types of work to which they might be assigned. For example, a classroom teacher might become qualified for library work.

5. Pre-retirement counseling and educational programs should be established to interest teachers in preparing for retirement, advise them with respect to various retirement problems, help them select jobs after retirement, and assist them with the mechanics of retirement itself.

6. Job-placement services should be provided for retired teachers either by school systems or by teachers' associations.

7. The organization of clubs and centers for retired teachers should be sponsored by school boards and teachers' associations.

8. Contact with retired teachers should be maintained by both school boards and teachers' associations through such devices as:

- a. Sending sympathy and greeting cards on appropriate occasions
 - b. Keeping retired teachers on the mailing lists for all publications
 - c. Keeping retired teachers informed of developments in the school system
 - d. Allowing them to participate in social events and other school functions
 - e. Appointing retired teachers to advisory committees
 - f. Providing special rooms and lounges in the school building and association headquarters
 - g. Visits to retired personnel by supervisors, administrators, and former co-workers
 - h. Periodic visits by the school nurse
 - i. Encouraging former teachers to return to the school for help and advice
 - j. Providing life memberships in teachers' associations and professional organizations
 - k. Using association magazines and house organs to keep track of retired personnel and provide them with useful information
10. Health insurance (hospitalization—surgical and medical benefits) should be provided for all retired teachers without cost.
11. Financial assistance should be made available to retired teachers in need. This would be a suitable project for a teacher's association.
12. More communities should give attention to the housing problems of retired teachers through such action as the construction of homes for teacher retirants.
13. The establishment of Craft Guilds and the operation of outlets for the sale of products could be a means of solving the employment problem of retired teachers. A teachers' association might well sponsor such a project.
14. All school systems should provide some suitable program for

recognizing the services of teachers not only at time of retirement, but before and after retirement as well.

15. Released time for older teachers to participate in community activities should be an effective means of helping teachers adjust to retirement.

THE HISTORY AND DEVELOPMENT OF THE NATIONAL VOCATIONAL GUIDANCE ASSOCIATION

by WILLA NORRIS*

STATEMENT OF PROBLEM AND PROCEDURES

This study is a historical review of the growth and development of a professional organization from its founding in October 1913, to the end of its fiscal year, June 30, 1952. In April 1951, the N.V.G.A. became a division of the newly created American Personnel and Guidance Association, but no changes in its organizational pattern, activities, or national staff were made until the beginning of its fiscal year, July 1, 1952.

The purpose of the study was to present a summary of the activities of the N.V.G.A. from 1913 to 1952. No attempt has been made to evaluate the work of the Association or to make recommendations for its future. An effort has been made, however, to call attention to the important contributions which the N.V.G.A. has made to the guidance and personnel movement. Trends within the guidance and personnel field are indicated through the activities carried on by the N.V.G.A. It is hoped that a record of the past may prove helpful to those responsible for planning the direction which the N.V.G.A. will take in the future.

This study is the first complete account of the N.V.G.A. to be prepared. Brief summaries only of various phases of the inception and development of the Association have been written. Committee members, professional staff at the headquarters office, individual members, and other interested persons seeking information about the background or the past activities of the N.V.G.A. have found it necessary to search in a variety of sources.

This is an auspicious time to make such a study. In the first place, many individuals who have participated in the growth of the Association from early years are still living, and could be consulted. Second, the organizational pattern of the N.V.G.A. and its activities will undoubtedly change with divisional status in the American Personnel and Guidance Association. In addition, important records of the N.V.G.A., which have been preserved at its headquarters, are still intact. On July 1, 1952, the N.V.G.A. relinquished its national office to the American Personnel and Guidance Association. It may be that the American Personnel and Guidance Association in the future will not be able to maintain all early records of its various divisions.

Source materials for this study were both primary and secondary. Principal sources were the Association's periodical, records at the head-

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quarters office, and interviews with persons who played important parts in the development of the Association. Each issue of the N.V.G.A.'s periodical published from 1915 to 1952 was reviewed. In the period from 1915 to 1918, the periodical was called the *Vocational Guidance Bulletin*; from 1920 to 1952, it was variously designated *National Vocational Guidance Bulletin*, *The Vocational Guidance Magazine*, *Occupations*, *The Vocational Guidance Magazine and Occupations*, *The Vocational Guidance Journal*. Records at the headquarters office included all meetings of the Board of Trustees held during the period from 1920 to 1952; all minutes of the annual meetings of the Delegate Assembly; and correspondence files as well as reports of committees and divisions available for the period from 1920 to 1952.

After study of the various source materials and analysis of the problem, certain general topics seemed to appear. In addition to the first chapter, covering "The Problem and Implications", and the last chapter, "Summary and Conclusions", it was decided to divide the study into seven main areas for treatment. The chapter "Origin and Development" is a chronological summary of the activities of the N.V.G.A. from 1913 to 1952. Other chapters are: "The Membership", "The Branches", "The Association's Professional Periodical", "Annual Conventions", "Divisions and Committees, Yesterday and Today", and "The N.V.G.A. Becomes a Unit of the A.P.G.A.".

SUMMARY

In 1913, five years after the "so-called" beginning of the vocational guidance movement by Frank Parsons, a national organization devoted to the interests of vocational guidance was founded. Since that date, this organization, named the National Vocational Guidance Association, has been the only national group devoted primarily to the furtherance of vocational guidance.

From 1913 to 1919, the Association's main activities were its annual meetings and the publication of a periodical, the *Vocational Guidance Bulletin*. During this period the membership was around one hundred. In 1919, there was a lapse in Association activities, but it was later reorganized in 1920.

From 1920 to 1952, the membership grew from 128 to 6,460. During this period, yearly conventions, which showed growth in content of program and attendance figures, were held; committees grew in number as well as in scope of activities; and a publication program was expanded.

In the spring of 1951, by vote of the membership, the N.V.G.A. became a division of the newly created American Personnel and Guidance Association. There were no changes made in its organizational

pattern or functions until July 1, 1952, the period which this study covers.

On July 1, 1952, the N.V.G.A. could look back on thirty-nine years of growth as a separate organization. In those thirty-nine years it could show that, as a national organization devoted to the interests of vocational guidance and occupational adjustment, it had placed emphasis on such areas as the development of branches, the publication of a professional journal, the development and maintenance of standards, cooperation with government agencies and with other national and international organizations, national and regional conventions, and committee activities.

AN ORGANIZATION OF BRANCHES

Early vocational guidance workers who were instrumental in reorganizing the N.V.G.A. in 1920 recognized the importance of building a national organization from the grass roots, as the Association was reorganized as a federation of branches. At that date seven branches existed. By 1952 there were 86 branches scattered throughout the United States, Puerto Rico, Hawaii, and Canada. A cross section of the membership of the branches showed guidance workers employed in elementary and secondary schools, colleges and universities, social agencies, government, business, and industry. The majority of the membership was employed, however, by educational institutions.

Some branches have been exceedingly active with committee work, regular program meetings, and a variety of projects; others have been branches in name only. Some branches have had fewer than ten members, others have had more than two hundred. For many guidance workers the activities of the local branch have been the only means of in-service training. Through branch organization many members have realized the need for cooperative efforts by all community agencies if adequate guidance services were to be provided for youth and adults.

A PROFESSIONAL PERIODICAL

Two years after its founding, the N.V.G.A. started publishing its own periodical. From 1915 to 1918, some twenty-three issues of the *Vocational Guidance Bulletin* were published. From 1920 to 1952, the Association published thirty volumes of its periodical. During this period, over 18,000 pages devoted to articles of a professional nature, book reviews, visual aids, and other information pertinent to the guidance and personnel field were printed.

As a house organ in 1913, the periodical reached less than five hundred persons in the United States. By 1952 the periodical, a professional journal as well as a house organ, was being sent to some 9,920 sub-

scribers located throughout the world. Of this number, 6,640 were members of the Association; 3,460 were nonmembers.

Throughout its publication years the periodical has emphasized vocational guidance rather than the broader aspects of guidance and personnel work, and has been primarily devoted to the interests of public school guidance workers. There have been many articles in each volume, however, covering the broader aspects of guidance and personnel work, and intended for nonschool guidance personnel.

DEVELOPMENT AND IMPROVEMENT OF STANDARDS IN VOCATIONAL GUIDANCE

Since its inception, the N.V.G.A. has attempted to carry out its purpose of fostering vocational guidance and occupational adjustment, and establishing and improving professional services in this field. In particular, the Association can look back through the years and note the emphasis which it has placed on (1) the development of standards for the practice of vocational guidance in general, (2) the development and maintenance of standards for occupational materials, (3) the improvement in the training of counselors, and (4) the establishment and maintenance of standards for vocational counseling agencies.

As early as 1920, the N.V.G.A. realized the necessity of establishing a guide or code of principles which vocational guidance workers could follow. The first set of principles was adopted in 1921. As new concepts in vocational guidance developed, the principles were revised. Revisions were made in 1924, 1930, and 1937. The latest revision, in 1937, was entitled *The Principles and Practices of Educational and Vocational Guidance*. Guidance workers in this country, as well as those in other countries, have profited from this code. Translations of *The Principles and Practices of Educational and Vocational Guidance* have been made in Spanish, French, and Portuguese.

Since 1924, the Association has maintained an occupational research interest group. To this group, credit can be given for the development of the first standards for preparing and evaluating occupational materials. Throughout its twenty-eight years of existence, the Occupational Research Section (or Division) has helped to prevent the duplication of occupational materials and to further the means of gathering, evaluating, and using them. Significant publications of the N.V.G.A. which were sponsored by this group are: *The Basic Outline*, which was first developed in 1931; *Distinguishing Marks of a Good Occupational Monograph*, prepared in 1939; and the revision of these two publications as one document in 1950, under the title, *Standards for Use in Preparing and Evaluating Occupational Literature*.

The N.V.G.A. has attempted to develop standards in training of counselors through the establishment of a professional membership classification and the activities of committees interested in counselor training and certification measures. In 1944, the Association created the category of professional membership. Since its inception, the requirements for professional membership have been gradually raised. During the period from 1944 to 1952, some 1,988 persons made application for and were accepted as professional members.

Through committee activities, convention programs, and prepared publications, the N.V.G.A. has worked toward better training programs for vocational counselors. Particularly helpful to the membership and to the vocational guidance movement in general were the publications of *The Preparation and Certification of the School Counselor*, in 1941, and *Counselor Preparation*, in 1949. The former was a publication by the Association's Section on the Preparation for Guidance Services; the latter, a publication sponsored by eight national organizations, with the N.V.G.A. playing the major role.

As early as 1915, the Association was cognizant of unethical practices in vocational guidance. Through its periodical, its convention meetings, and Ethical Practices Committee, the Association has endeavored to make its members and the general public aware of the unethical practitioner. By 1947, the Ethical Practices Committee of the Association had established its *Minimum Standards of Vocational Guidance Service*. In 1949, the first *N.V.G.A. Directory of Vocational Counseling Services* was published. The *Directory* listed eighty-two agencies which had made application for evaluation by the Ethical Practices Committee, and had met certain minimum requirements. Further revisions of the *Directory* appeared in 1950 and 1951. The latest edition included a listing of 169 approved agencies.

COOPERATION WITH OTHER AGENCIES

Throughout its history the N.V.G.A. has cooperated with government agencies and with other national and international organizations in the furtherance of the vocational guidance movement. For example, during the second year after its inception the Association aided the Children's Bureau of the United States Department of Labor in a nation-wide survey of vocational guidance activities. Later, in 1938, the Association was instrumental in the establishment of a federal guidance office, The Occupational Information and Guidance Service. Upon various occasions, through resolutions passed at conventions and at branch meetings, protests have been made regarding budget cuts in government agencies which would affect vocational guidance throughout the country. The Association in 1947 collaborated with the United

Nations Educational Scientific and Cultural Organization in furthering vocational guidance among the member nations. In 1948, the International Labor Office sought help from the Association in preparing vocational guidance materials to help meet manpower needs in European countries.

Since its founding, the N.V.G.A. has cooperated with national organizations having related purposes by holding concurrent annual conventions or joint sessions. Earliest cooperation was affected with the vocational groups, National Society for Vocational Education and the Vocational Educational Society of the Middle West, and the National Educational Association. Later, in 1934, the Association participated in the formation of the Council of Guidance and Personnel Associations, and was a member of the council until 1952. In 1951, the Association decided that it could better accomplish its aims if it joined with certain guidance and personnel organizations in the formation of the American Personnel and Guidance Association.

Upon two occasions, confidence was shown in the Association and its work in furthering vocational guidance by two large foundations. The scope of the Association, as well as the frontiers of vocational guidance, were extended by grants from the J. C. Penney Foundation in 1929 and the Carnegie Corporation in 1932.

CONVENTIONS AND CONFERENCES

Since its first convention in 1913, the N.V.G.A. has provided a yearly conference for its membership and interested individuals, except during the World War II period. Guidance and personnel workers have gathered at these annual meetings to hear accomplishments in the field, trends, and new techniques, and to discuss recurring problems. By 1952, there were approximately five hundred persons in attendance at the annual meeting.

In addition to annual conventions, there have been regional meetings. Since 1939, the N.V.G.A., through its regional conference program, has aided in the planning of area gatherings of guidance workers. Such meetings have provided opportunity for guidance personnel who were unable to attend national meetings to meet and discuss common problems.

COMMITTEES

To satisfy the special interests of members the Association has organized committees, sections, and divisions. Interest groups within the Association through the years have centered on the field of operation, such as rural guidance, state guidance, and out-of-school guidance. Functional emphasis, has been placed on such matter as individual

counseling, scholarships, and the administration of guidance services. Special projects and activities, as well as programs at conventions, have been of concern to the various groups.

EMPHASIS ON VOCATIONAL GUIDANCE

For thirty-nine years the N.V.G.A. has placed its emphasis on activities in keeping with a name and purpose devoted to vocational guidance. Among its membership, however, there have been many who were not in agreement with the name, the purpose, or the title and content of the main publication. There have been many who desired an organization which included the broad functions of guidance, and not merely the functions of vocational guidance. Such unrest finally resulted in the union of the Association with other personnel organizations in 1951 to form the American Personnel and Guidance Association.

LACK OF SUFFICIENT FUNDS

From 1913 to 1952, the N.V.G.A. has endeavored to meet the needs of a growing membership and a vocational guidance movement. Excepting for two foundation grants, the Association has had to live within the limits of a budget made possible only through the collection of modest membership and subscription dues.

This has sharply restricted services to members, travel by headquarters' staff, and central office facilities. Although its services have been substantial, N.V.G.A., with more adequate funds, undoubtedly could have exerted a greater influence upon the guidance movement.

THE ROLE OF THE PRINCIPAL IN THE GUIDANCE PROGRAM OF THE SECONDARY SCHOOL

by ANNE MARIE BARKLEY*

This is a study of the role of the principal in the guidance program of the secondary school. More particularly, it seeks to identify good practices in the field and to present them in a manner which will help principals to improve practices in their respective schools.

In addition to data gathered by an extensive study of the literature relating to the subject, an illustrative survey of practices in schools possessing reputations for outstanding guidance programs was undertaken. Two hundred and eight schools with enrollments of 500 or more pupils were selected by the chief officers of the state departments of education and of the District of Columbia, or by members of their staffs, as well as by a guidance specialist of the United States Office of Education.

In terms of criteria formulated to identify good practices, a questionnaire was prepared. The latter consisted of 11 printed pages and listed 83 questions; these were grouped under two major categories: Part I pertaining to the administrative duties which principals generally perform in the guidance program, and Part II pertaining to the specific duties which some principals perform in the services of the guidance program. All the principals participating in the study were asked to complete Part I of the questionnaire, and only those principals who perform specific duties in connection with the guidance services were asked to complete Part II.

The instrument was sent to the principals of the 208 schools especially selected for the survey. One hundred and eighty (or 92 per cent) of the questionnaires were returned.

As one might expect, in schools with reputations for offering outstanding guidance services to their pupils, a number of superior practices are evident. They include the following:

1. The guidance function of each member of the school is recognized through the assignment of specific duties.
2. The assignment is made orally, at a conference or meeting, and in writing, in a bulletin or manual.
3. The assignment is made by one or more line officers, notably, the superintendent or his assistant, the principal, the director of guidance, and the assistant principal.
4. An agreement between the assigning officer and the staff member based upon the interests, training, and experience of the latter, is the primary basis for making assignments.

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5. Guidance services are made available through a variety of agencies: the counselor, the homeroom, the classroom, etc.

6. Guidance services are made available to pupils whenever the need arises.

7. Administrative arrangements are made to facilitate the flexibility necessary to provide guidance services whenever the need is felt.

8. Assignments of both a directing and a participating nature are made to the principal.

9. Staff members participate in planning and evaluative processes.

10. Any guidance worker, working through a planning committee, can initiate planning processes.

11. Planning is done by a special committee.

12. Guidance workers have a voice in initiating budget items for the guidance program.

13. A combination of informal and objective techniques is used to evaluate the guidance program.

14. The guidance program is organized according to a combined line and staff structure.

15. A system of controls is used to check on the performance of guidance duties by staff members, including the administrator of the guidance program.

16. Comprehensive understanding of guidance assignments by staff members is promoted orally by individual and group contacts and by formal and written means.

17. The principal assumes major responsibility for seeing to it that guidance workers understand their assignments.

18. Initial understanding of guidance duties is supplemented by a combination of oral and written means.

19. A comprehensive program of induction training relating to the guidance program is provided for new staff members.

20. Inservice training pertaining to the guidance program is comprehensive in nature and is provided in a variety of ways.

21. The principal assumes major responsibility for providing for an inservice training program.

22. Cooperative teamwork among staff members is achieved in a variety of ways.

23. The principal assumes major responsibility for achieving cooperative teamwork among staff members.

24. A system of communication whereby each guidance worker knows his own functions and limitations and those of his fellow workers is achieved.

25. The principal shows leadership in assuming responsibility for winning the cooperation of the public in the guidance program, opening

areas of the program to lay participation, and coordinating school and community services.

26. The principal assumes functions of a participating nature in the guidance services.

27. The principal sees that the staff is equipped with the training, assistance, and information necessary for effective participation in the guidance program.

28. The principal utilizes his role as chief liaison officer of the school to contribute to the placement service and follow-up studies.

29. The necessary administrative arrangements are made to provide for the strategic use of occupational, educational, and related information.

30. The principal serves as a referral agent and also makes referrals.

31. The principal applies the findings of follow-up studies to various phases of the school program for purposes of revision or improvement.

Even schools that have reputations for outstanding guidance programs show evidence of practices which need improvement. They include the following:

1. Members of the special service personnel (the physician, the psychologist, and, the psychiatrist) should be provided with opportunities to participate in the planning and evaluative processes.

2. Participation by the principal in the guidance program should be limited to the degree that his administrative responsibilities are not neglected.

3. Those duties in the guidance services whose efficient performance requires special training, skill, and information should be assigned to qualified personnel.

4. Provision should be made for the coordination of the guidance services of the school with those of other community agencies.

5. Areas of the planning and evaluative processes, as well as the services of the guidance program, should be open to qualified lay participation.

The study indicates that the leadership of the principal and his active participation are essential in almost every phase of the program. The principal of the small school (enrollment under 500) participates more actively in the guidance services of his school because of necessity and he frequently exerts leadership in the program for the same reason. However, in the larger school (enrollment over 500), pronounced leadership and the active participation of the principal generally stem from a high degree of interest rather than necessity. Without effective leadership on the part of the principal, guidance services are likely to be inadequate.

BACKGROUNDS OF THE GUIDANCE AND COUNSELING MOVEMENT IN THE UNITED STATES

by JANET LOUISE BINGNER *

The purpose of the study was (1) to explore the backgrounds of the guidance and counseling movement in the United States; (2) to describe the more significant social, economic, and psychological forces which have caused the guidance movement to develop; and (3) to trace the roles of some of the agencies and organizations which have made significant contributions to guidance theory and methodology.

The principal sources of data for the study were the following: books and encyclopedias; bulletins and brochures; dissertations and theses; governmental regulations and directives; memoranda, minutes, and reports from public and private agencies, and from professional societies; and professional journals and newsletters. Additional information was obtained through interviews with public officials and professional workers in the field of guidance and counseling.

The words, *counseling* and *guidance*, were defined as follows:

Counseling is the process of assisting individuals to analyze problems of adjustment that confront them and working out solutions to these problems.

Guidance is the process of helping people when they are confronted with problems of decision and assisting them to make intelligent choices.

The report presents first of all, an overview of the growth of the guidance and counseling movement as it occurred in the fields of business, industry, and education. There follow, in succeeding chapters, more detailed discussions of the influences of national crises, public and private agencies, and professional organizations. The following paragraphs summarize these chapters.

Chapter II, "Changes in the United States Which Have Made Guidance Necessary", contains an overview of the guidance and counseling movement and describes the socio-economic trends and psychological developments in business, industry, and education which made guidance necessary. The high points included in the discussion on the evolution of personnel work in industry are these: (1) the Industrial Revolution which emphasized the machine at the expense of the human operator; (2) the scientific management movement which started the trend toward a more balanced consideration of the factors of production; (3) the development of industrial psychology as a branch of applied psychology, with its emphasis upon the importance of individual differences; (4) the

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rise of the personnel management in business and industry; (5) the effects of World War I, especially pertaining to the psychological tools and techniques devised for personnel work; (6) the cleansing effect that the depression of the 1930's had upon many unsound personnel programs; and (7) the re-direction of psychological research into areas of worker attitudes.

The second part of Chapter II describes the socio-economic trends and psychological changes in the field of education which have made guidance necessary. Through a brief sketch of the development of our educational system, an attempt is made to establish the need and the desire for student personnel work. Some of the points brought out in the sketch are these: (1) the growing wish of the people to have a single open educational road from kindergarten to college for all children; (2) the gradual expansion of the curriculum to include a wide variety of courses, thereby presenting the student with a situation calling for "choices"; (3) the role of Frank Parsons in originating the vocational guidance movement; (4) the early publications from the United States Bureau of Education pointing to the failure of the schools to meet the needs of all children; (5) the development of new measurement instruments and techniques under the stimulus of World War I; (6) the evolution of vocational education as a part of the curriculum and the consequent expansion of vocational guidance services; (7) the increase in direct federal participation in youth education and the intensive re-examination of educational objectives in the 1930's; (8) veterans' educational guidance activities stemming from the provision of educational benefits for veterans following World War II; and (9) the growing concern over the preparation of school counselors.

Chapter III, "The Contributions from the Tests and Measurement Movement", reports the origin and nature of some of the tools and techniques which have become indispensable equipment in many phases of guidance work. It is noted that the origins of the movement antedate Cattell's first use of the term, "mental tests", in 1890. A discussion of significant "benchmarks" in the testing movement include (1) the *Binet-Simon Test* of 1905 and its various revisions, (2) the *Army Alpha Test* of World War I, (3) the widespread interest in testing after World War I, and (4) the present-day expansion in test construction to meet the requirements for objective measurement in other fields of work.

Chapter IV, "The Mental Hygiene Movement", describes a movement which shares with the entire guidance movement many of its objectives and areas of work. In the literature, the history of the mental hygiene movement is associated with the origin and growth of the National Committee for Mental Hygiene founded in 1909 by Clifford Whittingham Beers. The purposes of the National Committee were (1) to campaign against the flagrant abuses practiced in many of our

mental institutions and (2) to sponsor a world-wide movement aimed at the prevention of mental illness through a positive program of mental hygiene. In striving for these goals, the National Committee for Mental Hygiene has sponsored needed research, published scientific and lay literature on the subject of mental hygiene, and provided consultative aid to organizations interested in mental hygiene.

Chapter V, "World Wars I and II", in addition to the *Army Alpha Test*, previously mentioned, describes such other developments stemming from World War I as: the establishment of the American Council on Education, the Women's Bureau, the United States Employment Service, the education and training programs of the Veterans' Bureau, and the Vocational Rehabilitation Service for civilian workers. The influences of World War II were primarily in the nature of increased activity in the organizations mentioned above. The chapter also includes a description of the program of separation counseling established by the Adjutant General's Office of the War Department.

Chapter VI, "The Great Depression", records the influences of the economic crisis of the 1930's upon the guidance and counseling movement. This was a period usually identified as one of intense federal activity in many areas of our national life. From among the numerous alphabetical agencies created at that time, the educational programs of the FERA (Federal Emergency Relief Administration), the WPA (Works Progress Administration), the NYA (National Youth Administration), and the CCC (Civilian Conservation Corps) were perhaps the most significant for the field of guidance. Organizations other than governmental, however, were also active at this time. The American Council on Education established its American Youth Commission and the National Education Association created a special committee which later developed into the Educational Policies Commission. These, too, influenced the Guidance Movement. This chapter also includes an account of the National Occupational Conference.

Chapter VII, "United States Office of Education", briefly describes the origin and early years of the Office of Education and the establishment within it of the Office of Information and Guidance Services in 1938. The purpose of this office was to give consultant aid to public school systems that were establishing or expanding guidance programs with the help of federal funds. It also conducted research, initiated regional and national conferences, and published a variety of materials.

Chapter VIII, "United States Bureau of Labor Statistics", describes the work of the Government's principal fact-finding agency in the field of labor economics. Recognizing the important place that up-to-date information has in vocational counseling, the President's Advisory Committee on Education in 1938 recommended the establishment of an Occupational Outlook Service within the Bureau of Labor Statistics

with the specific task of processing and publishing information for use by counselors.

Chapter IX, "United States Office of Vocational Rehabilitation", began with a review of the steps taken by the states and the Federal Government to legislate programs aimed at helping the disabled civilian worker. The passage of the Smith-Fess Act of 1920 set up a federal-state cooperative program of vocational rehabilitation with the federal office acting as consultant and administrator of federal funds and the state handling the actual rehabilitative work.

Chapter X, "United States Veterans' Administration", begins with a description of the educational and training program for disabled veterans as stipulated in the Smith-Sears Bill of 1918. Experience gained in this program influenced the administration of later programs stemming from the passage of Public Laws 16 and 346 (G.I. Bill) after World War II. To help with the extensive guidance services included in these programs, the Veterans' Administration contracted with many colleges and universities for the establishment of advisement centers. This development was one of the largest and most unusual experiments in federally subsidized counseling services that has ever been tried. Two of its major contributions were (1) an opportunity for the guidance profession to show college administrators, clients, and the general public, the potentialities of guidance services, and (2) the expansion of counselor training programs to meet the demand for professionally qualified counselors.

Chapter XI, "United States Women's Bureau", describes the origin of the Bureau in 1920 and the nature of its work aimed to improve the welfare of wage-earning women in America. Its chief contribution to the guidance and counseling movement is to be found in the preparation and publication of materials concerning the types of work done by women and the problems which confront them.

Chapter XII, "United States Employment Service", records a brief history of the Service and describes in some detail the nature of its contributions. These are grouped into six categories as follows: (1) the production of such tests as the *General Aptitude Test Battery*, the *Oral Trade Questions*, and the *Performance Trade Tests*, (2) job analysis activities, including production of the *Dictionary of Occupational Titles*, the *Individual and Volume Job Descriptions*, and the *Occupational Guides*, (3) provision of labor market information, through publication of the *Employment Security Review*, and various newsletters, (4) the various counseling programs sponsored by the Employment Service; (5) contributions to counselor training, especially the *Employment Service Manual* on the inservice level, and (6) developments in the field of management control as applied to the administration of employment services.

Chapter XIII, "United States Department of Defense", describes the

contributions of various programs of the Armed Forces to the guidance movement. The Navy's recruitment program, which has vocational guidance implications, is described. The testing and classification procedures and the personnel services used by the Air Force are explained, and the separation program of the Army is discussed. The chaplains' program which has made important contributions in the field of personal counseling is also described.

Chapter XIV, "United States Bureau of the Census", calls attention to the statistics collected, analyzed, and published by the Census Bureau. These provide the scientific bases for the occupational and educational information used by the counselor.

Chapter XV, "The American Council on Education", includes an account of the creation of the Central Committee on Personnel Methods in 1924. This Committee, among other things, developed the widely used *Cumulative Record Card*. Another committee of the Council developed the *Psychological Examinations for College Freshmen and High School Students*.

This chapter also describes the creation, in 1937, of the Committee on Student Personnel Work which has published many brochures on various phases of personnel work. Attention is also called to the merger of the Council's testing services with two outside testing services to form, in 1949, the Educational Testing Service.

Chapter XVI, "The National Education Association", deals particularly with the contributions of four NEA departments to the guidance movement; the Department of Elementary School Principals, the National Association of Secondary-School Principals, the American Association of School Administrators, and the National Association of Deans of Women. Mention is also made of the work of the Educational Policies Commission and the American Educational Research Association.

The final chapter of the study, Chapter XVII, "The Professional Societies", outlines the major contributions of professional guidance organizations to the movement. Brief case histories of five associations and their subdivisions are included. In general, they have contributed largely through publications, research, annual conventions, and the improvement of standards.

THE DECENTRALIZED CONTROL OF PUNCTUAL ATTENDANCE IN THE SECONDARY SCHOOL

by ROSALINE MARY EDWARDS •

This is a study of the problems involved in the decentralized control of punctual attendance in secondary schools. More particularly, it seeks to identify problem areas in decentralized control and to discover practices which would serve to solve, effectively, problems in these areas.

A thorough examination of the literature relating directly or indirectly to the problem, was made to identify problem areas; and twenty-four authorities in the fields of educational administration, guidance, curriculum, and secondary education were consulted for the purpose of verifying and discussing the problem areas. To discover practices which would serve to effectively solve problems in these areas, a survey was undertaken of schools operating under systems of decentralized control of punctual attendance. The survey instrument was a thirteen-page, printed questionnaire, and it was sent to seventy-five secondary schools. Most of these schools had been recommended by educators in a position to know which schools in the United States are operating under systems of decentralized control of punctual attendance and the remainder had been indicated in the literature.

The questionnaire listed five problem areas, as follows: machinery of operation, curriculum, inservice training, guidance, and school-home-community relations. Questions were listed under each area. Despite the fact that more than one hour was required to complete the questionnaire, seventy (or ninety-three per cent) of the questionnaires were returned.

Although the schools in the study have reputations for decentralized control of punctual attendance, some practices found in these schools show greater promise than others for promoting the objectives of the decentralized punctual attendance program. These practices are as follows:

1. All staff members have specific responsibilities in the punctual attendance program, and the assignment of these responsibilities is definite and specific.
2. The machinery of operation is established so that the total staff participates without sacrificing the efficiency of operation.
3. Adequate controls are set.
4. The necessary administrative arrangements are made to insure the smooth operation of the machinery.

• B.S. in Ed. 1934. A.M. 1935. Ph.D. 1952, Fordham University; Ed.D. conferred June 9, 1954. Professor in charge of research: James Harold Fox, Professor of Education.

5. Pupil needs and interests and community needs serve as the primary bases for determining the curriculum.

6. Provision is made for flexibility in the curriculum to meet changing needs and interests.

7. Provision for staff and pupil participation is made in the evaluation of the curriculum.

8. Staff members receive specific training to carry out their responsibilities in the punctual attendance program.

9. The total staff participates in the guidance program as it relates to punctual attendance matters.

10. The school recognizes itself as one of several community agencies offering services to the pupil.

11. The cooperation of the home and community is enlisted in the punctual attendance program.

12. Provision is made for the coordination of the efforts of the school and other community agencies to promote punctual attendance objectives.

13. The principal assumes leadership responsibilities in the punctual attendance program.

Several practices revealed by the schools in the study indicate need for improvement. These include the following:

1. Members of the administrative staff tend to retain certain duties which should be delegated to the homeroom teacher, the classroom teacher, and the extra-curricular activity sponsor.

2. Inadequate provision is made for the scheduling of homeroom meetings of a guidance nature.

3. Inadequate provision is made for evaluating the machinery of operation pertaining to the control of punctual attendance.

4. Pupils and community members are not permitted to participate in determining the curriculum.

5. The pupil's academic success determines the degree of his participation in extra-curricular activities.

6. Lay participation is not permitted in the evaluation of the curriculum.

7. Little initial help is given to teachers in undertaking punctual attendance projects.

8. Little clerical help is given to teachers to assist them in the performance of their punctual attendance duties.

9. Little effort is made to determine, through an evaluation of the supervisory program, the increased efficiency of staff members in carrying out their punctual attendance responsibilities.

10. The schools provide for limited lay participation in the punctual attendance program.

11. Little effort is made to provide for a system whereby the school and other community agencies may share resources of guidance value.

This study has indicated five major findings. The machinery of operation has been carefully set up to include total staff participation, specific and definite assignments, controls, and administrative arrangements. The curriculum is determined, first, by pupil needs and interests, and second, by community needs, and provision is made for flexibility in meeting changing needs and interests. A comprehensive program of inservice training helps to equip teachers with the skills and information necessary for the efficient performance of their punctual attendance duties. Total staff participation is evidenced in most phases of the guidance program, particularly in the services of the program. The cooperation of the home and community is enlisted in promoting the objectives of the punctual attendance program. The fact that all the schools in the survey indicate activity relating to punctual attendance matters in the five problem areas set up in the study, shows an acknowledgment of these areas as major considerations in the problem of decentralized control of punctual attendance.

SOME ASPECTS OF FOUNDATION ASSISTANCE FOR SPECIAL EDUCATION

by FREDERICK ANDERSON INDORF*

This is a study of the practices followed by foundations in the allocation of funds for the support of special education. It seeks to provide some insight regarding the size and nature of the problems in the several fields of special education and to indicate categories which are especially in need of foundation support. It further examines the procedures used by foundations in the allocation of grants and sets forth some of the criteria which are employed by the foundation staffs in approving grants. For those seeking foundation assistance it reviews some of the more common criteria which must be met in order for requests to receive favorable consideration. For foundations it summarizes the more critical aspects of the problems concerned with the support of special education.

PROCEDURES

The research effort was devoted to the following: a search of the literature concerning the operation of foundations and the various fields of special education; correspondence with sixty-five foundations whose charters permit assistance in the area of special education; interviews with numerous workers in the various branches of special education and persons associated with philanthropic giving; a survey of several thousand applications for foundation grants; a detailed review of applications from five foundations which were concerned with grants in the field of special education; gathering information by interviews and by correspondence from persons considered to be experts in various aspects of special education and foundation interest in it; an analysis of the hearings of the Select Committee to Investigate Tax-Exempt Foundations, House of Representatives, Eighty-second Congress, Second Session, generally known as the Cox Committee; and a study and analysis of the annual reports of a number of foundations covering a three-year period of operation.

Much of the operation of foundations is a relatively secretive affair. Although most of the large foundations issue annual reports, these give very little indication as to just what are the bases upon which the allocation of grants is made. Very little indication is given as to the nature of the staff work that goes into the making of the recommendations which result in the acceptance of the projects for which grants are made.

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Seldom is there any mention of the types of grants which are rejected or the reasons for such rejection.

However, access was gained to the complete files of one large foundation and to the sections of the files of several other foundations which pertained to requests for grants in the various fields of special education. The review of the material contained in these files, coupled with the interviews with the foundation personnel, represents the most valuable original contribution of this study. Although the data from individuals tended to be in the form of opinion, it is original data in the sense that the persons concerned are those who determine the policies and operate the procedures with which the data is concerned.

Much of the data acquired through personal interviews and from foundation files were subsequently validated to a degree by the material published in the volume of hearings of the Cox Committee. Data from this source have been of great help in establishing the reliability of the other data secured directly from the foundation.

REVIEW OF THE LITERATURE

There is considerable literature concerned with special education. There is much less concerned with the operation of foundations. There is practically none that concerns the support of special education by foundations. The literature relates the development of the philosophy of philanthropic giving as it shifted from the original emphasis on humanitarian or "do good" projects to a later emphasis on projects with definite social values. From palliative measures foundations turned to projects designed to improve the "whole tone of society".

During the same time, individuals belonging in the various categories of the "handicapped", became subjects of educational interest for society rather than mere objects of pity. However, foundations for the most part did not follow society's increasing interest in the various areas of special education. Government and other private agencies took over the humanitarian aspects of aid to exceptional children, but few of the foundations seemed to grasp the social goals that could be served by aid to the "exceptional".

Society at large has become increasingly interested in doing something about the care, treatment, and education of exceptional children. Foundations, on the other hand, have expressed relatively little such interest. There has been a much greater application of medical science to the physical problems of these children due to the activity of governmental agencies and organizations supported by the public fund drives. However, the service rendered to them in the field of education has been largely based upon the dictates of expediency, rather than being the result of principles discovered through scientific experimentation and

research. This "investigating, testing, and demonstrating" which foundations have done in other fields has been lacking in special education.

Foundations have been very busy fostering the extension of knowledge in many other fields, but the literature does not show that there has been any very considerable interest on the part of foundations in the field of special education. Nowhere has there been an "ideal" method developed for the education of socially maladjusted, mentally retarded, or gifted children. One important reason is that foundations have not lent the support that would have made this possible.

EXTENT OF THE PROBLEM

Each of the categories of exceptional children was surveyed for the purpose of determining the number of children in need of special education. Since nowhere are adequate statistics kept that present an over-all picture of the number of children in a particular category, it has been necessary to secure information regarding authoritative estimates and actual incidence of certain conditions and to derive therefrom the reliable estimate of the number of children involved.

It can be fairly well substantiated that there are in the United States over 3,000,000 children in need of special education on a full-time basis. There are some 5,000,000 others who need special education on a part-time basis. This means that about one child in every twelve of school age should be receiving special education, and that over 20 per cent need some special education if they are to be provided with educational opportunities equal to those of normal capacities.

There are over 1,000,000 children in each of the categories of mentally retarded and emotionally maladjusted. From these groups society will draw its greatest problems. There are some 400,000 gifted children, who if properly educated, might provide the answers—if they were given proper educational opportunities. However, at present all three categories are largely neglected.

SOME ASPECTS OF FOUNDATION GRANT ALLOCATION

American foundations today seem to be mainly engaged in searching out men of high professional standing who have ideas concerning research or developmental projects which fit into the general pattern of current interest of the respective foundation. Foundations seem to have found few such men in the field of special education. Generally speaking, the foundations are not interested in palliation, but they are interested primarily in scientific and social progress.

Foundations apparently believe that they are most likely to find such

men and ideas at the larger centers of higher learning. Consequently, the major proportion of funds goes to such institutions. It has been established that 20 such large institutions of higher learning receive about 70 per cent of all the funds given by foundations to all of the colleges and universities in the United States.

There appear to be no standardized forms or procedures used in applying for a grant. The informal presentation of an idea to a staff member may be all that is initially required. If the foundation is interested, they will assign staff members to follow up the initial request and secure such additional information as may be necessary in order that the decision may be reached in regard to a grant by the foundation. Often this follow-up does not involve an exhaustive inquiry into the merits of either the men or ideas concerned. It is simply concerned with whether or not the project is a "good idea," and whether the person making the request has sufficient professional stature to be successful in the project. They are likely also to want to know if the university supporting the request is of high caliber in the field of interest of this grant. If so, the project may be approved. Small grants-in-aid often entail a much more detailed examination of both the idea and the person making the proposal.

Foundations seem to be mainly concerned with the "advancement of knowledge". If a project happens to fall within the current area of interest of a foundation and seems to represent such advancement, little more is required.

Foundation personnel seem to be of varied backgrounds; and no generally recognized professional standards seem to be used in recruiting operating personnel.

There seems to exist very little exchange of information between foundations; and consequently operational procedures vary greatly. In some, operational procedures are relatively simple, since the foundation is largely under the control of one person, the executive director.

Nearly every foundation seems to have one person who sets the general tone of its policy, and dominates, to a considerable degree, the direction of its operation. Consequently, the voice of a Keppel, or a Fosdick, or a Dollard seems to rise above the other "spokesmen" for foundations in a given period. At the present time, it would seem that someone from the Ford Foundation may become the spokesman for the present philosophy of foundation operation, since this is the largest fund-granting operation now extant. Just as the operation of first the Carnegie and later the Rockefeller Foundation tended to greatly influence the pattern of subsequent foundation operation, so the Ford Foundation in the present era may tend to create very strong currents that may influence other foundations in the general direction of its goals.

THE ROLE OF FOUNDATIONS IN SUPPORTING SPECIAL EDUCATION

The areas of special education which, for the most part, are neglected, are those of the emotionally and socially maladjusted child, the mentally retarded child, and the gifted child. Obviously, these then are the areas which are in greatest need of foundation support. Do these types of children merit foundation assistance? Why should foundations be interested? The answers to these questions are relatively clear from the data presented.

Certainly, it is generally agreed that in terms of social rewards and the proper utilization of our national human resources there is no area of special education that is in need of greater attention and from which the nation would be more likely to benefit than that concerned with intellectually gifted children. This seems to have been recognized for years, but as yet educational leadership for the gifted child has been far from noteworthy. The lack of foundation attention for gifted children is understandable in the light of this relative lack of leadership, even if there were no other factors influencing this paucity of interest.

It is rather difficult for the government to provide special help for the gifted. There is always the possibility that the general population may feel that an undemocratic "elite" is being given special privileges. It has been customary to select such an elite for our military academies, but up to the present the government has done very little more than this. There is evidence to support the view that the foundations should make great efforts to identify and educate gifted youth in a variety of professions.

Developing answers to the problems posed by maladjusted youth is also a great need which it would seem that the foundations are best qualified to meet. Juvenile delinquency is widely recognized as a critical area of our national life. Yet the most important project concerned with delinquency, which is now being supported by foundations, is a study being supported to the extent of 50,000 dollars per year for four years.

The problem of delinquency affects over 300,000 youths yearly. Certainly, if this problem is of the great moment which public outcry would lead one to believe, a budget of several million dollars a year could be made available by foundations to help solve the problem. With over 300,000 youngsters yearly involved in juvenile court procedures, a million dollar research program would actually only represent the expenditure of three dollars for each toward the development of preventive measures. Yet no foundation has really undertaken to provide assistance for such a project. Meanwhile, 75,000,000 dollars are being collected by one agency to be applied to a single disease that rarely affects more than 35,000 people yearly.

It is sufficient to say that neither in the realm of delinquency, nor in any of the other contiguous areas of emotional maladjustment, have foundations provided any significant support. Researchers interested in these problems complained to the writer that they must scramble for the few "crumbs" of money that are available.

A similar situation exists in regard to the other largest group of exceptional children, the mentally retarded. Apparently, no foundation has yet recognized the great need in this field. If foundations are interested in developing and supporting projects which have the possibility of far-reaching results, certainly here is an area where such results might well be expected.

The foundations have a very special role which they could fill in supporting the education of exceptional children. None of the groups concerned with the study of socially maladjusted, mentally retarded, or the gifted have been able to do sufficient research to know and understand the real nature of the numerous problems in each category. Consequently no effective educational programs specifically designed for them have been developed. At the same time, the opportunity to discover facts applicable to the general population, particularly from the socially maladjusted and the mentally retarded, has been ignored. Here are areas of human need where the numbers are great and the present focus of public interest is small. Due to the nature of the individuals involved, the public is not likely to become interested soon. These are areas where research and development would have great import for the general population. Since the problem of support for projects is not likely to receive attention from the usual governmental or private agencies, certainly it is one which fits the foundation's self-styled purposes of operation.

PROBLEMS NEEDING FURTHER RESEARCH

If the needs of various types of exceptional children are to be met more adequately, it will be necessary for foundations, educators, and others interested in special education to study the many aspects of those problems about which too little is known. The following suggestions are made in an attempt to point out some of the more productive areas for further study.

1. The development of a professional program of preparation leading to qualification as an educational research specialist needs further study. At the present time such a program is far too expensive to be within practical operational limits of institutions of higher learning. Furthermore, such research specialists are in little demand. If further study were given to this problem, through projects supported by foundations, ways might be found to overcome both of these difficulties.
2. Some foundation personnel state that much so-called educational research is not basic research. Studies should be instituted which would

examine the goals, methods, and tools of educational research. These studies might result in findings which would provide the substructure for future fundamental educational research.

3. Studies need to be undertaken that would demonstrate how broader patterns of educational research could be inaugurated and encouraged. Every classroom teacher should have some knowledge of basic educational research techniques, and small educational research projects need to be carried on by such individuals continually. This is an area needing much further study.

4. Individuals who are professionally engaged in special education need to study ways of organizing better approaches to the problems of research in the field. This might mean the formation of national committees in each of the areas of special education so that concerted action could be taken in regard to determining priorities and providing a general frame of reference within which such research would take place.

5. Educators generally, and those working in special education particularly, need to study the methods that foundations use in the allocation of grants. They need to acquire a much greater familiarity with the operating policies of various foundations, so that better liaison may be developed with foundation operating personnel.

6. Foundations should consider sponsoring studies to determine what are the opportunities that exist for human advancement within the various research areas provided by different types of exceptional children. The possibilities are largely unrecognized.

7. Foundations should study the advantages of providing "incentive" grants-in-aid for individuals preparing for professional activity in the various fields of special education. More adequate support in the fields of professional preparation should result in the development of more professionally trained educational research personnel.

8. Foundations should study personnel policies, particularly the matter of employing staff personnel with a background of educational experience in special education. Such individuals could provide the foundations with expert assistance in the understanding of the problems in the various areas of special education.

9. There needs to be mutual study of education by schools and other units within universities regarding the development of possible co-operative relationships with foundations, which might result in the development of materials and pilot projects in the various fields of special education.

10. Foundations need to study the desirability of making grants to representative school systems in rural and urban areas for the development of pilot projects concerned primarily with the education of the three large categories of now neglected exceptional children—the men-

tally retarded, the emotionally and socially maladjusted, and the gifted.

11. Schools of education should study the means whereby more graduate students could be encouraged to choose research studies in the field of special education for the purpose of furthering the development of better knowledge, skills, and understandings in the various categories of exceptional children.

12. Foundations should institute studies, along with such agencies of the Federal Government as the United States Office of Education, Census Bureau, or others, so that there may be established a more adequate system of keeping records concerning the needs and case dispositions of the various types of exceptional children. Further basic studies need to be made so that there can be at least adequate tools to use in the identification of all types of these children.

13. Professional groups, such as the International Council for Exceptional Children, need to study how they can become more militant as representatives of the millions of neglected exceptional children. Perhaps they could institute a plan for establishing priorities for needed research in each area, and also determine ways in which wide dissemination might be given to the findings which result from research.

14. Individuals requiring foundation support need to study the process of organizing projects so that they will have more general application as far as the outcomes are concerned. Too often at present such projects are mainly concerned with immediate service functions. Foundations are unlikely to be interested in projects which are palliative and affect only a small number of people immediately served by the project.

15. Professional people in special education should institute studies aimed at the critical evaluation of present practices. Such studies should result in the development of methods, materials, and techniques which are more adequate than those which are now extant for the particular needs in each of the various fields of special education. Many obvious areas of needed research are open here.

The foregoing problem areas are those which have been pointed up most by the data which has been presented. These seem to be among the more critical aspects of the various fields of special education. An exact delineation of all of the aspects of each problem area is not within the limitations of the present study.

CONCLUDING STATEMENT

Foundation support for special education in the United States is extremely limited. While foundations have shifted from an early emphasis on palliation to a philosophy which is based upon the improvement of society through the application of science, special education has been largely neglected as an object of foundation support.

The needs in the various areas of special education must be more clearly defined before foundations can be expected to enlarge their support for special education projects. Greater emphasis must be placed upon basic research concerned with the educational problems of each type of exceptional child. Professional people in special education need to give especial attention to those areas which are now grossly neglected, namely, the socially and emotionally maladjusted, the mentally retarded, and the gifted. If greater foundation support can be secured, particularly for these three areas, the present philosophy of foundations would be well served, and society should benefit greatly.

THE VALIDITY OF THE KUDER PREFERENCE RECORD

by CYRUS HAROLD McCULLY •

PURPOSE AND NEED

The purpose of the study was to inquire into the validity of the *Kuder Preference Record, Form BB* (hereafter designated by the letters KPR), particularly to determine whether, based upon direct interpretation of the nine-variable KPR profile, the instrument can be used effectively to assign an individual to one or more appropriate occupational groups. In view of the widespread, and apparently uncritical, acceptance of the KPR as an instrument for use in counseling incident to vocational choice, and in view of the lack of substantial occupational validation of the inventory, there was clear need to probe further into the complexities of occupational validation and profile interpretation.

DESCRIPTION OF THE KPR

The KPR was developed by initial selection of items on an *a priori* basis for tentative scales, and by refinement and purification of the scales through item analysis so as to achieve the desired reliability and relative mutual independence of the scales. The weighting of items is arbitrary and bears no relationship to the differential in response to the items by workers in diverse occupations. The scales are not balanced in terms of number of options which score on the several scales, or in terms of opportunity to express preference for any one category of interest over the other several categories of interest represented in the inventory. The "approximation method" of profile interpretation as recommended by the test-author is inexact and impressionistic, and is unsupported by empirical evidence.

The research reported thus far on the KPR is extensive from a quantitative standpoint. Qualitatively, it has been subject to several limitations, particularly these: (1) use of the cross-sectional rather than longitudinal approach; (2) failure to establish or utilize a men-in-general reference norm which meets relevant criteria for a satisfactory reference norm; (3) failure to take job satisfaction into account on the part of subjects making up occupational criterion groups; (4) failure to determine whether, and in what manner, low preference scores should be used in profile interpretation; and (5) failure to determine the amount of overlap in distributions between occupational criterion groups and a men-in-general group, or among criterion groups.

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THE PROBLEM

The problem of the study was posed in terms of six questions as follows:

1. Will the KPR differentiate groups of employed veterans in selected fields of work in the broad categories of professional and managerial, clerical, sales, agricultural, and skilled occupations, from a men-in-general reference norm group?
2. Will the KPR differentiate among groups of employed veterans in the several selected fields of work?
3. Will the KPR differentiate a group of veterans employed in a given field of work from a group of veterans who chose an occupation in that field of work incident to vocational counseling and began training for the chosen occupation, but who subsequently abandoned that field for unrelated employment?
4. Does a significantly low score on the profile of a given occupational group, as well as a significantly high score, contribute to the definition of interests of that occupational group?
5. On those scales where significant differences are noted between a criterion group composed of employed veterans in a given field of work and a men-in-general group, what is the amount of overlap in the distributions?
6. On those scales where significant differences are noted between given criterion groups composed of employed veterans in selected fields of work, what is the amount of overlap in the distributions?

SOURCE OF THE DATA

The study was based upon available data from a random sample of 7,720 veterans, distributed geographically throughout the United States so as to conform in general with the distribution of the veteran population, all of whom had pursued training under Public Law 16, but had completed or discontinued that training prior to February 28, 1952. The data had been assembled on that sample from the official VA records of the subjects, and from a mailed questionnaire inquiring into occupational and employment status and job satisfaction, to which 92 per cent of the subjects had responded. Of the sample, it was found that 3,354 male veterans had been administered the KPR in connection with counseling incident to the selection of a vocational objective for which to pursue training under Public Law 16, and that the raw scores on each of the nine scales of the KPR were available for each individual. This latter group of 3,354 veterans constituted the sample upon which the study was based.

TREATMENT OF THE DATA AND FINDINGS

Of the 3,354 veterans in the sample used, 3,074 (91 per cent) had responded to the mailed questionnaire inquiring into occupational and employment status and job satisfaction. The respondent sample of 3,074 male veterans was tested in terms of six relevant population characteristics against population parameters, where known, and where not known, against independent 10 per cent random samples of the parent population of more than one-half million veterans. The respondent sample was found representative of the parent population to a highly satisfactory degree for purposes of the study, particularly in terms of (1) field of training by last vocational objective for which in training under Public Law 16; (2) geographical distribution; (3) age at time of entry into training; and (4) degree of disability rating. The respondent sample was tested further on the basis of six relevant population characteristics for the purpose of determining whether bias had been induced through failure of 280 veterans to respond to the mailed questionnaire. These tests revealed no differences beyond those attributable to sampling error in terms of (1) field of training by last vocational objective for which in training under Public Law 16; (2) age at time of entry into training; (3) degree of disability rating; and (4) scores on scales of the KPR.

A men-in-general group to be used for purpose of a reference norm was selected in terms of four relevant criteria as follows:

1. The reference norm should be based upon subjects which are representative of the occupational levels of the several criterion groups used in the study.
2. The subjects making up the reference norm should be representative of some known, pertinent population.
3. In addition to occupational status, certain other information should be known about the subjects making up the reference norm, particularly the conditions under which the KPR was administered, and the age, geographical distribution, and employment status of subjects.
4. A reference norm designed for use in revealing occupational differentiation should be based upon subjects in employed status rather than in trainee or unemployed status.

It was noted that Kuder's published norm based upon 2,667 adult males in employment did not meet fully the relevant criteria, while the 2,797 employed respondents drawn from the 3,074 respondents of the study sample did meet those criteria. Having found further that the 2,797 employed respondents differed significantly from Kuder's group of 2,667 adult males on a number of the scales of the KPR, and also having found differences in interests as reflected by the KPR associated with age and with employment status of subjects in the study sample,

it was decided to use the group of 2,797 employed respondents as a reference norm group.

From the sample of 2,797 employed respondents, eleven occupational criterion groups were drawn, ranging in size from 48 to 109 cases each. Each criterion group was made up of veterans employed in a relatively homogenous grouping of specific occupations in a conservatively defined field of work as set forth in Part IV of the Dictionary of Occupational Titles. Only veterans expressing unreserved job satisfaction were included in the criterion groups. Each criterion group was further defined in terms of geographical distribution, age, estimated length of time in current employment, and weekly earnings of subjects. Each of the broad occupational categories of professional, managerial and official, clerical, sales, agricultural, and skilled was represented in the study by one or more criterion groups.

Nine of the eleven occupational criterion groups used in the present study were satisfactorily differentiated by the KPR from the reference norm group. The KPR failed to differentiate satisfactorily two criterion groups, composed of general clerical workers and farmers, respectively, from the reference norm group. For satisfactory discrimination the arbitrary criterion was set that there should be a positive difference on at least one scale significant at the .01 level, and a negative difference on at least one scale at the .01 level. The scales differed in relative discriminating power, the persuasive, artistic, mechanical, and clerical scales proving most effective in this respect, and the social service, scientific, and musical scales least effective.

The extent of differentiation between each criterion group and the other eight criterion groups on scales of the KPR was determined on the basis of significance of inter-mean differences. The mechanical, persuasive, and clerical scales proved the most effective of the nine scales in discriminating among the criterion groups, and literary, social service, and musical, the least effective. Only the accounting group was found to be satisfactorily differentiated from all other occupational criterion groups. The engineering group was satisfactorily differentiated from all other groups except those in the skilled trades, mechanical repairing, electrical repairing, and bench crafts. The differentiation of the managerial, clerical, sales (higher) and sales (lower) respectively from the other criterion groups was considered less than satisfactory. The three groups in the skilled trades, mechanical repairing, electrical repairing, and bench crafts were satisfactorily differentiated from all other criterion groups except engineering, but not from each other.

Groups of veterans designated U groups, who had entered training in vocational objectives falling in the several fields of work represented by the occupational criterion groups used in the present study but who were found by follow-up to be employed in other relatively unrelated

fields of work, were compared with the corresponding criterion groups, designated S groups, on scales of the KPR. A surprising lack of discrimination was noted between corresponding S and U groups. Only in the cases of the accounting and mechanical repairing groups was there discrimination at the .01 level, in each case on two scales and in opposite directions. Bi-serial r 's were computed on each of these four scales between S and U groups. While the coefficients obtained were low, they were significant, and in the directions of the observed differences.

The percentage of overlapping in distributions was computed on all pertinent KPR scales for each criterion group, between the criterion group and the reference norm group, and between the criterion group and the other several criterion groups. By pertinent scale is meant any scale on which the particular criterion group differed from the norm group at the .05 level or beyond in either direction. The fifty-two obtained percentages representing overlap on pertinent scales between the several criterion groups, and the reference norm group, ranged in magnitude from 45 per cent to 95 per cent, with a median percentage overlap of 84. The 102 percentage representing overlap on pertinent scales between the several criterion groups and all other criterion groups which differed at the .01 level from the reference norm in the same direction, ranged in magnitude from 50 per cent to 99 per cent, with a median percentage overlap of 91.7. This far exceeded the magnitude of overlap reported by Strong among the occupational scales of his interest inventory. Cutting points on pertinent scales were established at the 75th percentile on the reference norm for scales showing positive differences, and at the 25th percentile for scales showing negative differences. An arbitrary criterion of overlap tolerance was established on a logical basis, so as to consider 30 per cent misses or less out of the criterion group as acceptable, and 50 per cent misses or more as unacceptable for purposes of using the KPR in counseling individuals incident to vocational choice. In only two out of a possible fifty-six instances was the amount of overlap between criterion groups and the reference norm found fully acceptable on this basis, namely, on the computational and clerical scales for the accounting group; and in only seven additional instances was the amount of overlap found acceptable on a minimal basis, namely, on mechanical for the engineering, mechanical repairing, electrical repairing, and bench crafts groups; on scientific for the engineering group; and on persuasive for the sales (higher) and sales (lower) groups. In the remaining forty-three instances the amount of overlap in distributions on pertinent scales exceeded that which could be considered as acceptable under the criteria adopted. Since the amount of overlap in distributions between the several criterion groups on pertinent scales of the KPR materially exceeded the amount of

overlap between the several criterion groups and the reference norm, it could be deduced without computation that the overlap between the several criterion groups on pertinent scales exceeded that which could be considered as acceptable.

CONCLUSIONS

The KPR possesses the first validity of an interest inventory as evidenced by the satisfactory differentiation of nine occupational criterion groups from an appropriate men-in-general group. That such differentiation is in part a function of the particular criterion groups used was evidenced by the failure of the KPR satisfactorily to differentiate a group of general clerical workers and a group of farmers from an appropriate men-in-general group. Such demonstration of the first validity of an interest inventory provides no basis for assuming that the instrument can be used effectively in counseling individuals with reference to occupational choice.

The KPR does not discriminate satisfactorily among occupational criterion groups. The degree to which it does discriminate is a function of the relatedness of the occupations making up the criterion groups being compared as is evidenced by (1) satisfactory discrimination of the accounting group from all other criterion groups; (2) less than satisfactory discrimination among the managerial, clerical, sales (higher), and sales (lower) groups; and (3) no discrimination of significance among groups of workers in the three skilled trades, mechanical repairing, electrical repairing, and bench crafts.

For the most part the KPR failed to discriminate between groups of veterans satisfactorily employed in given fields of work, designated S groups, and groups of veterans who had chosen an occupation in that field of work incident to counseling and had begun training for it, but who subsequently abandoned that field for unrelated employment, designated U groups. That the KPR will discriminate between corresponding S and U groups in certain fields of work was evidenced by discrimination at the .01 level between the corresponding groups on two scales each, for the fields of accounting and mechanical repairing. Whether failure of the KPR to differentiate more extensively in this respect represents a limitation of the instrument, or whether the interests of the groups compared in reality do not differ, is indeterminate upon the basis of available evidence.

A significantly low score on a KPR profile contributes to the definition of interests of an occupational group as was evidenced by significant negative bi-serial coefficients of correlation between S and U groups in the fields of accounting and mechanical repairing, on one scale in each case on which the S group was significantly lower than an appropriate

men-in-general group. The degree of such contribution in terms of relative amount, remains indeterminate upon the basis of this study. However, the finding suggested the hypothesis that the degree of likeness of an individual to a particular criterion group should be considered as bearing an inverse relation to the individual's score on any KPR scale on which the criterion group shows a significant negative difference from an appropriate men-in-general group.

Based upon direct profile interpretation, the KPR does not possess the second validity of an interest inventory to an extent which warrants its use in connection with counseling individuals relative to occupational choice, as was evidenced by the magnitude of overlap in distributions between the several criterion groups and the men-in-general group on pertinent scales.

The magnitude of overlap in distributions on pertinent scales between the several criterion groups and the other criterion groups gives further support to the conclusion that, based upon direct profile interpretation, the KPR does not possess the second validity of an interest inventory to an extent which warrants its use in counseling individuals relative to occupational choice.

RECOMMENDATIONS

In view of the findings and conclusions of this study, it is recommended that further research be undertaken in an effort to determine whether, on some basis other than direct profile interpretation, the KPR can be shown to possess sufficient differentiating power to warrant its use with individuals. The findings reported by three independent investigators suggest that conversion of the profile to a single index score by use of the discriminant function technique will yield a basis for assigning an individual to one or more appropriate occupational groups within an empirically determined margin of error. This seems to point a direction that might well be taken in further research effort.

It is also recommended that research be undertaken on the structure of the inventory as such, particularly to determine the effects of the multi-scale scoring of certain individual items, of the imbalance in number of options on the several scales, and of the imbalance in opportunity to express preference for one category of interest over other categories of interest included in the instrument.

Finally, it is recommended that the hypothesis of this study relative to the meaning of significantly low preference scores be tested further, and that attention be given to degree of contribution, in terms of relative amount, of a significantly low point on the KPR profile of an occupational criterion group to the definition of interests of that criterion group.

cent was maintained for inclusion in the *High* or *Low* extreme groups. This standard meant that the number of nominations for the outstanding or low category on a trait had to be equal to at least 80 per cent of the total nominations given to the person on that trait. Two extreme levels of adjustment were selected, *High* and *Low*. The criterion groups were selected by algebraic computation of ratings on factors 1, 3, 4, and 6. The factors of technical competence and family adjustment were eliminated from consideration.

The basic procedure involved the following steps:

1. Analysis of the responses to the incomplete sentences given by individuals in the analysis group
2. Determination of the items which appear to reliably indicate differences between various groups, utilizing the criterion
3. Construction of scoring keys utilizing the discriminating items
4. Analysis of the efficiency with which the scoring keys predict the criterion on a cross validation group

Over 22,000 responses were punched on IBM cards to facilitate categorization. Frequency counts in each scoring category for each occupational group were analyzed using chi square. A method for chi square analysis using IBM facilities aided the computation of the great number of chi square values.

Reliability of the sentence completion test was estimated by the test re-test method on 23 federal employees with a 35 day-time lapse between the test administrations. Guttman has recently maintained that reliability in general cannot be estimated from a single trial, and that all single trial reliabilities are in effect, lower bounds. For projective techniques, a coefficient of stability as estimated by the test re-test method is most feasible. The coefficient is computed using a formula which considers the agreement and disagreement between responses for both administrations of the test.

Of the 349 scoring categories, more than twice the number to be expected by chance at the 10 per cent level of confidence differentiated between the high and low rated groups at the 10 per cent level or beyond. Values of $+1$ and -1 were assigned these categories in the scoring key based on direction of choice by the high and low groups. Inter-scoring reliability was based on scores assigned by two raters considering agreement and disagreement of each response. Biserial r and point biserial r were not considered appropriate correlational indexes for the data. An index of selective efficiency suggested by Jenkins was utilized. This index shows how well the test accepts superior or high rated individuals and rejects inferior or low rated persons. In addition the significance of difference between means for the high, low, and bad record groups was calculated.

Utilizing the number of scoring categories which discriminate be-

tween occupational groups as an index of disparity of language responses between the groups, evidence is presented indicating differences between such groups. In addition, a "word picture" may be used to secure descriptions of apparent personality differences.

The hypothesis that poorly adjusted individuals tend to give many negatively toned responses and that well adjusted individuals give many positively toned responses was examined. The procedure entailed the selection of those scoring categories which could be identified as being positively toned and negatively toned. Percentages of individuals in each criterion group in the analysis sample selecting a particular scoring category were examined and the differences noted.

CONCLUSIONS

1. The sentence completion test may be adapted from use in the clinical situation to use in the civil service examining program with a known degree of reliability and validity.
2. The Holsopple-Miale sentence completion was validated on a sample of 341 cases, resulting in an index of selective efficiency of .560 on a cross validation sample of 342 cases.
3. A sample of 91 bad record cases composed of persons with histories of alcoholism, criminality, poor work, family, and health patterns, approximated the scores of persons rated low on the criterion, though the mean test score difference between the two groups was significant at the 1 per cent level of confidence.
4. The mean sentence completion test score difference between persons rated high on the criterion and those rated low, was highly significant beyond the 1 per cent level of confidence.
5. It was found that all responses to the incomplete sentence test could be located within 349 scoring categories, resulting in a fairly objective, easily used, scoring system, useable by civil service examiners not trained in clinical methods. (Of this number of categories, 69, or twice the number to be expected by chance were found to discriminate significantly between responses made by persons rated high and those rated low.)
6. The sentence completion test was found to have coefficient of stability of .85 based on test-retest with a sample of 23 professional, technical, and clerical workers.
7. The interscorer reliability based on agreement and disagreement of scoring by two raters working independently was .946.
8. If the number of scoring categories which tend to discriminate significantly between two groups is an index of the existence of the degree of personality difference in the groups being contrasted, then personality differences exist between the three occupational groups in the

study. The greatest differences exist between the professional, technical, and administrative groups rated high in adjustment, and the blue collar groups rated either high or low in adjustment.

9. The hypothesis that persons rated high in adjustment tend to give positively toned responses on the sentence completion test and that those rated low in adjustment tend to give negatively toned responses, was not sustained in the present study. A slight trend in the expected direction was found to be not significant.

THE IDENTIFICATION OF PROBLEMS OF COMMUNICATION IN TEXTBOOKS

by NELLIE ZETTA THOMPSON •

Throughout American history education has been dependent by philosophic choice upon private publishing for curriculum materials. Fortunately, the early textbook publishing houses were founded by educators with a sense of mission to supply the needs of the schools. The policy to serve the desires of the schools rather than to assume a role of leadership in curriculum development has continued, despite increased competition at a time when less than 2 per cent of the school budget is being spent for textbooks and the unit cost of production has reduced profits.

Although publishing has been so intimately linked with education, little has been known by educators about the problems of textbook making. Although communication is being studied for purposes of fundamental education, agricultural media, educational journals, and propagandistic effects, very little attention has been directed specifically to textbooks. If the quality of education is to be improved, presentation of content and instructional aids in textbooks needs to be studied as it relates to the learning process.

In the absence of printed sources, original research, going directly to the primary sources, was undertaken. The investigator sought by means of a survey of the judgments of experienced editors of the twenty-five major textbook publishing houses in the four major publishing centers to identify problems of communication in textbooks.

The editors constituted the only concentrated body of professional people expert in the analysis of problems of communication in textbooks from the viewpoint of publication. Their judgment was drawn from as many as forty-two years of experience in textbook making. Theirs were the offices where decisions and plans which have shaped American textbooks have been made and where substantiating evidence was available. The editors maintain contact with educators by means of more than 1200 sales representatives in the field, by preliminary testing of materials in as many as 400 public schools, by liaison with education associations, and, by libraries of educational publications. The publishing houses selected for the sample were reputable houses of national distribution, long established, sympathetic with public education by reason of the tradition of their founders and the background of the present editors. The houses represented approximately three-fourths of

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the dollar volume of sales. Cooperation with the American Textbook Publishers Institute was instrumental in securing complete response.

The depth interview with projective emphasis was the technique employed. The freedom of the depth interview, often three hours in length, which permitted exploration and probing of topic and detail, brought to light more problems, analytical details, and illustrative points, than a restricted schedule of questions could have accomplished. The unstructured technique, with varied phraseology and order of questions, provided a point of departure, yet as problems were uncovered they could be categorized and interrelated to serve as springboards for succeeding questions and interviews. Since each editor was a specialist for a different subject-matter field, grade level, or phase of production, the unstructured interview was the only feasible method to establish rapport and to ascertain the common and differentiated problems among them. The individualized approach and informal discussion, utilizing work at hand, as well as past experience, helped to create an atmosphere in which largely subjective problems, dealing with the intangibles of aesthetics and attitude, as well as with the sciences of communication and learning, could be externalized. It must be remembered that the purpose of the inquiry was to identify problems, not to ascertain their frequency.

Supplementary data were obtained by correspondence from numerous distant publishers outside the four centers visited—Boston, New York, Philadelphia, and Chicago.

Understanding of the problems identified was enlarged by consultation with communications researchers, tradebook editors, librarians, and textbook authors; by participation in conferences, workshops, clinics, and laboratories in creative writing, visualization, educational journalism, semantics, graphic arts, and editing; and by a search of contextually applicable literature.

The investigator found that problems of symbolic intercourse through the media of the printed page to impart knowledge from an abundant store, to transmit an idea or concept, or to convey a mental impression, could be classified and analyzed in three main categories—content, instructional aids, and presentation.

Textbooks are those books containing comprehensive treatment of a subject, prepared for the express purpose of providing content and instruction in a clearly defined area of the public school curriculum. The treatment and structure of subject matter is affected by the external pressures exerted upon it by curriculum trends, as well as by the high calibre of scholarship of the author.

Organized and minority group pressures have necessitated taboos in textbook writing which preclude full concept development. The comprehensive scope of the curriculum, the accretion of contemporary mate-

rial, and the voluminous detail of the scholarly writing combine to compress the material to a point of unreadable skeletonization.

There is an increased demand for learning-teaching aids in the schools. Collaborators who prepare chapter-end exercises, applications, activities, and bibliographies have difficulty in constructing material of sufficient variety and flexibility for adaptation to regional and individual differences.

Graphic illustration and design are presently the cause of considerable concern not only because of their added cost in production and their technical difficulties, but also because of their unexplored status as an effective and respectable means of communication in textbooks.

The relation of the text and the instructional aid is a problem of growing proportions as principles of visualization are applied to textbooks. The problem of learning-teaching aids is intensified by social change and by trends in the fusion of content for new curriculum patterns.

Problems of content and problems of instructional aids directly affect presentation. Treatment of material is related to the learning process.

Major contributions of past research to the presentation of the text have been studies of the difficulty and diversity of vocabulary; readability formulas based upon quantitative elements of simplified structure and personalization; and child growth and development studies of child interests and experiences.

Vocabulary control has dominated presentation practices, particularly at the elementary level, but gradation problems have arisen, presumably as a result of the impact of broadened real and vicarious experience of children. Readability indexes have not been favored by textbook editors except as an occasional check because of their tendency to damage expression. Simplification by formula often results in a tone offensive to the reader. Research on child interests and experiences has been outdated by social change, and current research has been largely restricted to reading interests.

The development of concepts is a problem of first magnitude in the making of textbooks. The selection of specific concepts and the number of concepts for each age-grade group, the planning for the intensification of the concept by repetition and introduction in multiple contexts, and the interaction of vocabulary burden and concept burden are parts of the problem.

Various approaches to concept development are possible by the selection and skillful use of appropriate expository treatment. Each type of development constitutes a distinct problem in craftsmanship.

Adequate communication has consumed the energies of writer and editor to such an extent that the value of graphic expression, that is, descriptive language to create vivid sensory impressions, has had little

consideration as a factor in improving communication. There may be a relationship between retention of a concept and the depth of penetration, which is sharper with affective language.

Problems of communication in textbooks can hardly be analyzed in isolation. Those which focus upon content are intertwined and interlocked with similarly complicated problems of instructional aids and presentation. Neither can individual problems of textbook communication be understood or related to the learning process or the craft of writing without a minute analysis of component elements.

Problems vary in degree among educational levels and are slightly differentiated among subject-matter fields. Verbal and visual concept development have distinct technical problems with common elements. The problems of communication in textbooks are affected by the mass media and contemporary social milieu.

It appears that there are underlying principles of communication common to verbal and visual presentation in all subjects at all educational levels, principles which are believed to hold for all mass media: analyze the audience, crystallize the message, select the appropriate media.

In order to effectuate improved communication in textbooks, the investigator recommends a liaison office attached to the American Textbook Publishers Institute, an independent research center supported by foundation funds under the auspices of a university, or a committee or commission of the Association for Supervision and Curriculum Development or the National Education Association to conduct continuing research on problems of communication and readership analysis, to offer practical assistance to writers and editors, and to undertake creative and coordinated planning to accommodate textbooks to curriculum change.

Undoubtedly, the temper of the times, the state of curriculum flux today, production methods and costs, the recency and intensity of problems, the circumstances surrounding the interviews, and the investigator's degree of familiarity with the problems left their mark upon the information gathered. In the subjectivity of the study, however, lies its strength as a piece of original research which may be used as a foundation for further investigation of specific problems.

